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ORIGINAL CONTRIBUTIONS

BONE TUMORS

THE CORRELATION OF PATHOLOGIC AND X-RAY FINDING IN THEIR DIAGNOSIS *

DALLAS B. PHEMISTER, M.D.
CHICAGO, ILL.

In the practice of medicine the physician must make use of all of the known means of obtaining information as to the nature of the diseases with which he has to deal. As new methods of investigation are developed, the knowledge obtained by their use must be correlated with that previously obtained by other methods and the errors of the existing conceptions of disease thereby corrected.

Thus, with the advent of the x-ray came a new method studying the pathology of disease in vivo. It then became necessary to perfect technic for applying it in the study of pathology to the various organs and regions of the body. These findings had to be correlated with the existing knowledge of pathology which had been obtained by gross and microscopic anatomic and physiologic methods. Great advances have come both in technic and knowledge obtained by its use.

There has also been improvement in our knowledge of gross pathology as a result of x-ray study of the early stages of disease, at which time biopsy or necropsy is seldom performed. The roentgenogram of the disease in vivo has at times been at variance with what was expected, reasoning from conceptions of its gross pathology. In such cases reinvestigation of the pathology in the light cast by its shadow, so to speak, has lead to improvement in our knowledge of the subject.

Correlation of pathologic and roentgenologic findings is of particular service in recognition of bone lesions including tumors, as no other diseased tissue affords such contrasts in roentgenograms as diseased bone. The ideal way for the clinician to study a bone tumor is for him to engage in both the clinical and the laboratory work on the case. After the diagnostic study has been made, the tumor, when operable, is removed, the specimen is dissected, photographed and sectioned, and in many cases more roentgenograms are made of the specimen. Final microscopic study is made of sections removed from as many regions of the lesion as show distinctive differences.

The pathologic changes of most concern to the roentgenologist that may take place in bone tumors are, first, destruction of old bone; second, the development of a local swelling; third, the occurrence of ossification or calcification of the tumor; fourth, the formation of nontumorous bone either within or without the neoplasm. These are the changes revealed either as reductions or increases in density that may be made out in roentgenologic standpoint. We may consider either the different types of tumors and the incidence of the different types of change shown in them by the x-ray, or we may consider

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*Read before the Seventh Annual Meeting of Pacific Northwest Medical Association, Tacoma, Wash., July 6-7, 1928.

the different x-ray changes and their relative significance for the different types of tumors.

Approached from the pathologic standpoint, we may divide bone tumors into benign and malignant groups and classify each group according to tissue types. The benign tumors comprise osteomas, chondromas, fibromas, hemangiomas, myxomas and benign giant cell tumors.

Osteomas may be divided into two types: (1) fibrous osteomas which grow by the direct transformation of osteoblasts into bone without the appearance of cartilage in the process. They are seen most frequently in the bones in the vault of the skull which are preformed in membrane, in the frontal and ethmoidal sinuses and in the external auditory canal. They are usually composed of dense bone which destroys or displaces the old bone in which it arises. There is never any appreciable amount of adjacent nontumorous bone formation in either the vault or the accessory nasal sinuses. They may reach large size, producing either inward pressure on the brain or outward deformity. Fibrous osteomas very rarely arise in connection with the long bones of the extremities. They arise from osteoblasts which are responsible for the transverse growth of the shaft and grow at a slow rate. I have seen but two such instances.

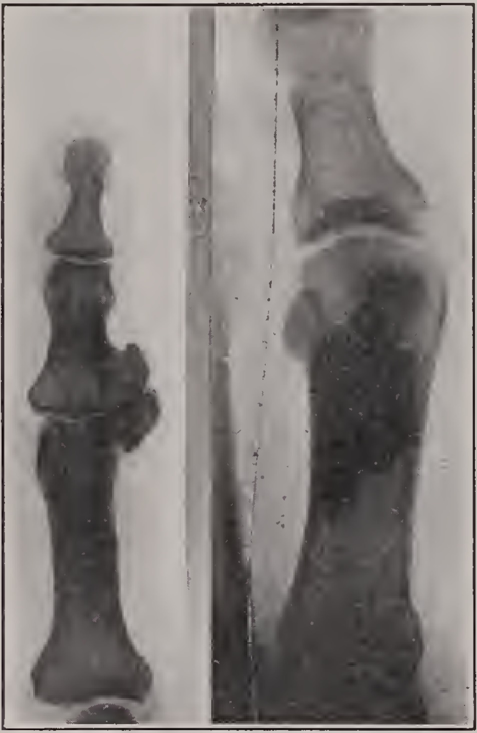

Fig. 1. Fig. 2.

Fig. 1. Fibrous exostosis of index finger.
Fig. 2. Fibrous exostosis of first metatarsal bone.

Case 1 was an exostosis on the proximal end of the second phalanx of the index finger in a woman thirty-nine years old. It had formed first five years before, and had been operated on two years later, with recurrence afterwards. On examination a hard bony swelling about 1 cm. in diameter was present on the palmar and lateral aspect of the proximal end of the second phalanx. A roentgenogram (fig. 1) revealed a cauliflower-like bony swelling attached to the surface of the bone by a broad base. Examination of excised specimen revealed a fibrous covering to its surface and a dense spongy bony interior. Microscopically it was composed of cancellous bone which was growing by fibrous ossification about its surface. There was no cartilage to be seen.

Case 2 is an enostosis in a man thirty-five years of age, whose great toe was x-rayed because of a fracture of the terminal phalanx. The picture revealed a dense oblong enostosis, filling most of the medullary canal of the distal half of the shaft of the second phalanx (fig. 2). As there were no areas of reduced density in the tumor it was presumed that no cartilage was present in it.

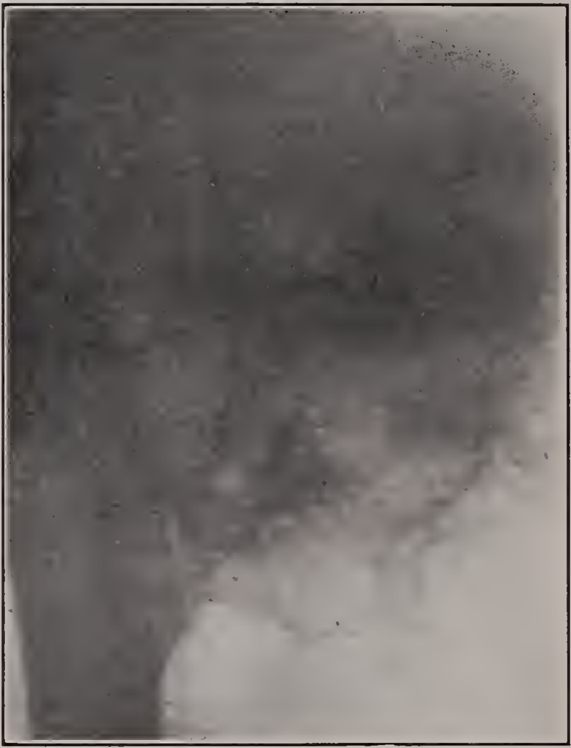

Fig. 3. Lateral view of huge cartilaginous exostosis from posterior surface of upper end of femur.

Cartilaginous osteomas or exostoses spring from the shafts or bodies of bones preformed in cartilage, and are composed of a bony protuberance which is capped in its growing regions by a layer of cartilage. These lesions usually resemble congenital growth disturbances and not true neoplasms. They may occur singly or multiple. The single exostoses arise from the end of a shaft or the side of a flat bone. The bony portion usually consists of a cortex which is an outward expansion of the cortex of the shaft and of cancellous bone on the inside which is continuous with the cancellous bone of the interior of the shaft. The cartilaginous cap is extremely variable in composition. Sometimes the entire head of the exostosis is covered by a thick but uneven layer of cartilage, while in other cases the cartilage is thin and comprises many separate islands which cover the wart-like bony prominences. When the layer of cartiage is thick, there is frequently marked calcification of its deeper portion giving a dense and thick zone which can usually be recognized in roentgenograms.

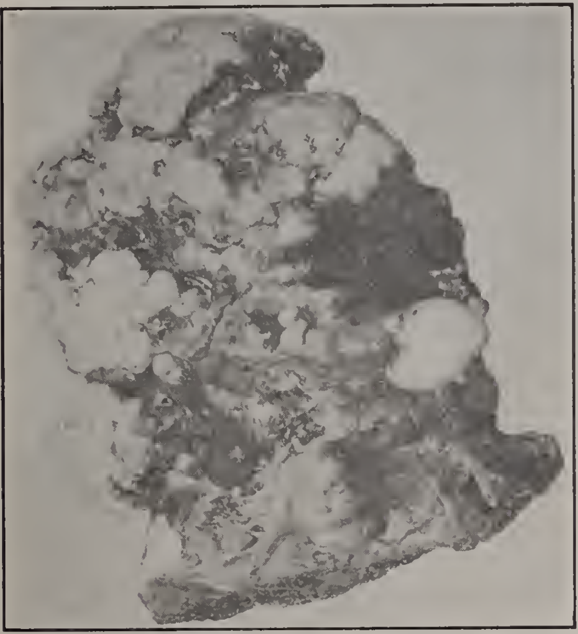

Fig. 4. Exostosis shown in fig. 3, removed at operation.

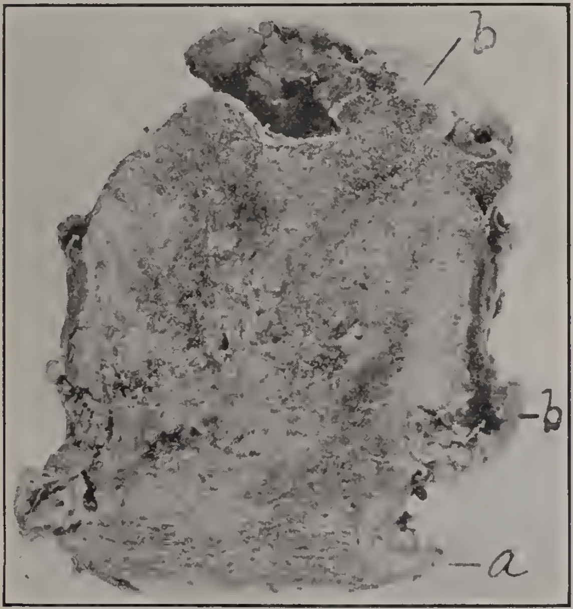

Fig. 5. Cut section of exostosis shown in fig. 4. Interior of cancellous bone. Pedicle is continuous with (a) cortex of shaft. Cap of cartilage shown at b.

Case 3. Figure 3 shows a roentgenogram and figures 4 and 5 the photographs of a large warty cartilaginous exostosis of seven years' duration, springing from the posterior surface of the upper end of the right femur of a thirty-eight year old man. At operation it was found to be covered by a thick bursa, containing serohemorrhagic fluid. Each prominence was capped by a layer of cartilage, through which there was enchondral bone formation similar to that of a growing epiphyseal line. There was a covering of fibrous tissue and the superficial part of the cartilage was hyaline. The deeper portions showed columnar cartilage with a zone of calcification at the junction with bone.

Multiple cartilage exostoses are a congenital affection, usually hereditary, of the skelletal system which is preformed in cartilage. The exostoses are similar in structure to the single lesions. They may be widely distributed on the ends of the shafts of the extremity bones. Partial arrestment of longitudinal growth and expansion of the metaphyses are not uncommonly associated lesions.

Malignant degeneration of either fibrous or cartilaginous exostoses is a very rare occurrence. Reflection of the cortex of the bone on to the tumor with expansion of the bone at the base of the tumor is one of the most valuable points in the diganosis of osteomas and x-ray evidence of this phenomenon is of great assistance in excluding sarcoma.

Chondromas arising in bone are either pure hyaline cartilage tumors or they are calcifying and ossifying chondromas. Hyaline chondromas are seen most frequently as single central lesions in the phalanges of the fingers. They are rare in the toes, in the long bones of the extremities and the large flat bones. They produce circumscribed destruction of bone from within and there is little nontumorous new bone formation about them. The result is frequently pathologic fracture. The great majority of the centrally destructive tumors of the finger bones are chondromas. Occasionally a cyst or giant cell tumor is seen. Malignancy is extremely rare.

Single chondromas in the ends of the shafts of the large bones are very seldom met with. The most common location is, perhaps, the lower end of the ulna, where the presence of the tumor may interfere with longitudinal growth and result in shortening. I have seen one instance of central chondroma in the lower end of the shaft of the femur, associated with a cartilaginous exostosis in the same region. Multiple hyaline chondromas are seen occasionally affecting only the bones of the fingers, where they produce both central and peripheral lesions. Sometimes they reach enormous size and produce great deformity and loss of function.

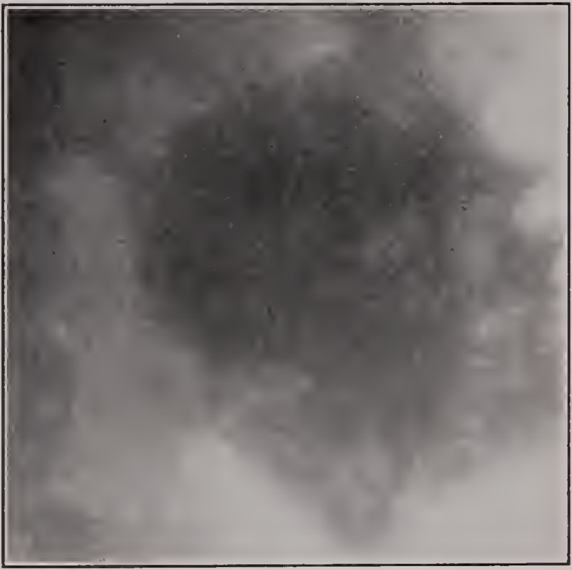

Fig. 6. Ossifying chondroma of eleventh rib.

Dyschondroplasia is a condition, in which there are accumulations of hyaline cartilage in the ends of the shafts of most of the long bones of one or two extremities. The lower extremities are affected oftener than the upper. The condition is a disturbance of enchondral ossification. Longitudinal growth is interfered with, resulting in shortening, and frequently the accumulation of cartilage is more extensive on one side of the bone than on the other, resulting in greater shortening on that side, with consequent angulation of the bone. The cartilage tumors in the ends of the shafts are recognizable in the roentgenogram by the oval areas or the longitudinal streaks of reduced density which they make in the involved growing regions. It is rare that the cartilage breaks through the cortex of the long bones, producing a tumor mass projecting into the soft parts.

The condition of dyschondroplasia is usually noticed early in childhood because of the shortening which it produces. As the child increases in age, the shortening becomes more evident and in case of the lower limbs there may be a difference of two to four inches in the length of the extremities by the time adult life is reached. Therapeutically the longitudinal growth of the lower end of the femur on the unaffected side should be arrested by obliteration of the epiphyseal line at the age of eight to twelve, depending on the amount of shortening. This will bring the two limbs out approximately the same length when adult life is reached. Osteotomy may be necessary for the correction of curvatures of the affected limb. I have successfully treated two cases in this way.

Ossifying chondromas are tumors which start either centrally or peripherally in bone and grow to the outside, producing large masses if left alone. They are seen most frequently in connection with the ribs and short bones, but rarely one may arise from the shaft of a long bone. They grow by proliferation of hyaline cartilage and are nodular about the surface. The deeper layers of cartilage calcify and subsequently ossify. The cut surface of the tumor shows an irregular mixture of hyaline cartilage, calcified cartilage and spongy bone. Separate islands of calcification or ossification may develop in the chondroma, but nearly always the bone of the tumor is connected directly with the old bone. The following case is an example.

Case 4. N. J., age 19. Swelling in region of left eleventh rib for four years which had gradually increased in size and produced pain, extending into the groin and left thigh. Examination revealed a large hard tumor mass over lower left chest and in right flank. The roentgenogram (fig. 6) showed a dense irregular shadow cast by the swelling. Excision of tumor. Examination showed that the specimen which arose in the eleventh rib near the costo-

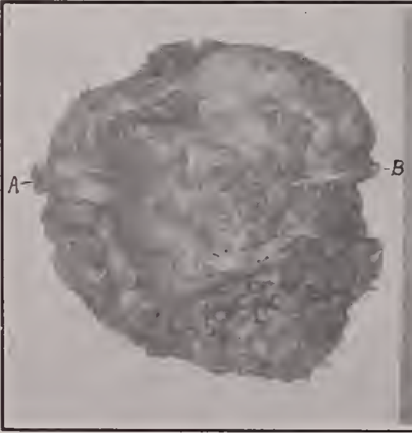

Fig. 7.

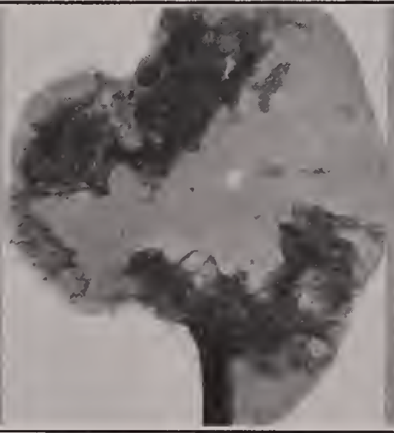

Fig. 8.

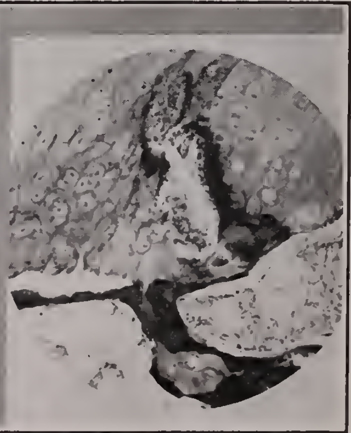

Fig. 9.

Fig. 7. Photograph of operative specimen shown in fig. 6. A—rib; B—cartilage.
Fig. 8. Roentgenogram of slice of tumor shown in fig. 7.
Fig. 9. Photomicrograph of tumor shown in fig. 7.

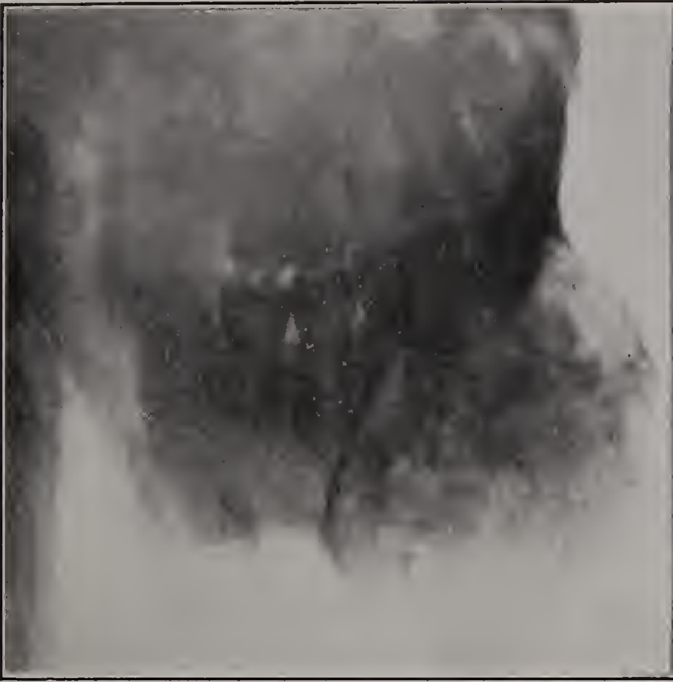

Fig. 10.

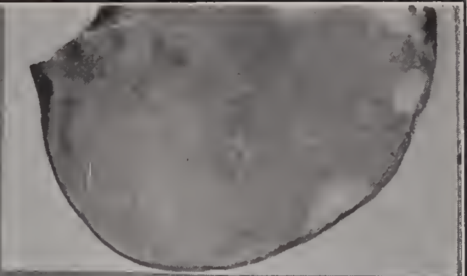

Fig. 11

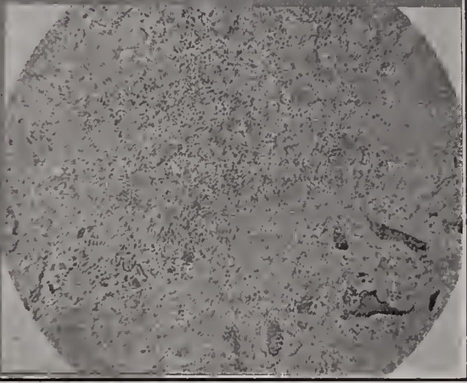

Fig. 12.

Fig. 10. Fibroma of lower jaw of four years duration in woman, age 18.
Fig. 11. Roentgenogram of slice of excised tumor shown in fig. 10 Spotted areas indicate ossification.
Fig. 12. Photomicrograph of tumor shown in fig. 10. Fibroma with ossification.

chondral junction was composed of nodular hyaline cartilage along its surface (fig. 7). On section the interior showed extensive ossification and calcification irregularly distributed throughout the tumor (fig. 8). The rest consisted of hyaline cartilage. Figure 9 is a photomicrograph, showing hyaline cartilage undergoing calcification and ossification. Eight years after operation the patient was free from recurrence.

The picture of ossifying and calcifying chondroma merges into that of cartilaginous exostosis. One sees a tumor with a bony pedicle like that of an exostosis but whose superficial portion corresponds with that of an ossifying chondroma, and it becomes difficult to say how the lesion should be classified.

Fibroma of the long bones is extremely rare. It has been described as either a periosteal or central lesion affecting the ends of the shaft. On the other hand, fibroma of the jaw bones is not an uncommon lesion. I have seen it four times; twice in the upper jaw and twice in the lower. In children the tumors grow fairly rapidly, while in adults the rate of growth is slow. They have a marked tendency to undergo ossification and for this reason have been described as ossifying fibromas. If ossification is marked, the new bone has a spongy arrangement, but if slight it may radiate, as in the case of osteogenic sarcoma.

Case 5. Figure 10 shows the x-ray appearance of a central fibroma of four years duration in an eighteen year old woman. It was excised and figure 11 shows a roentgenogram of a slice from the middle of the tumor containing a rim of nontumorous bone at the periphery and irregular shadows within. Figure 12 shows it to be composed of fibroblasts and bony trabeculae. Figure 13 is a photograph of the patient after reconstruction of the chin by means of a curved transplant taken from the upper end of the tibia.

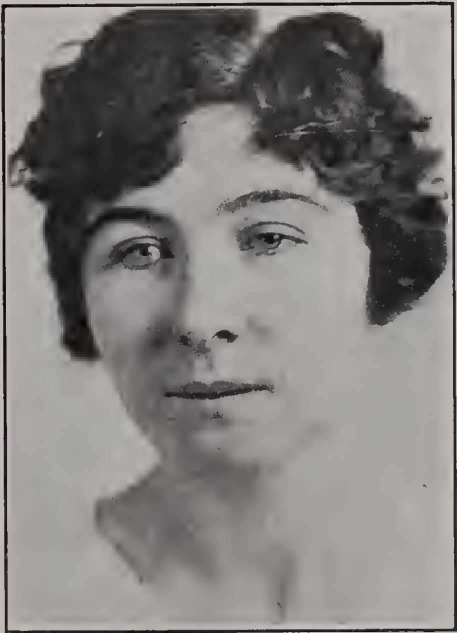

Fig. 13. Patient of fig. 10 after bone transplantation for restoration of chin.

Hemangioma is another unusual tumor of bone which has been seen most frequently in the spine

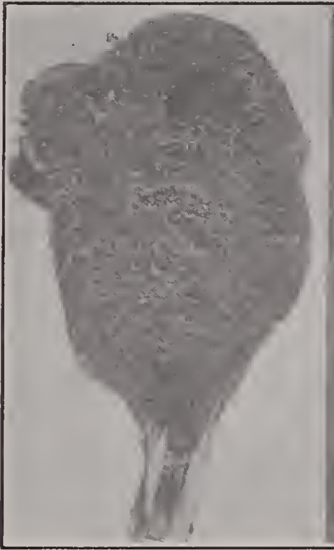

Fig. 14.

Fig. 14. Cut section of hemangioma of inner end of clavicle excised from woman, age 40. Well eleven years later.

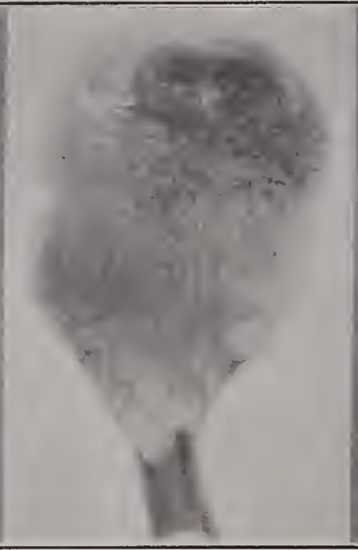

Fig. 15.

Fig. 15. Roentgenogram of specimen shown in fig. 14.

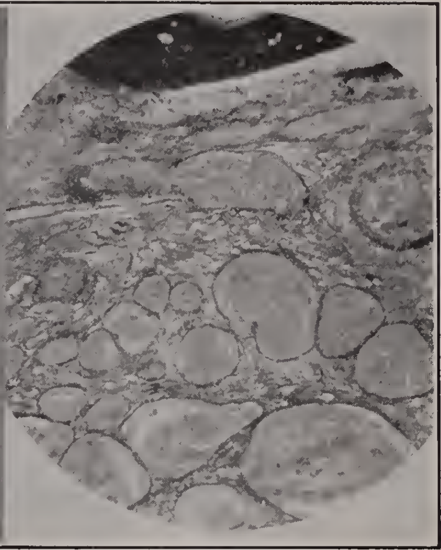

Fig. 16.

Fig. 16. Photomicrograph of specimen shown in fig. 14.

and flat bones, but it may involve long bones. It is a centrally destructive lesion which is difficult to diagnose from sarcoma, but its slow growth and the appearance of bony trabeculæ throughout its substance may serve to differentiate it from sarcoma as well as from giant cell tumor and cyst. Microscopically the lesion is usually a cavernous hemangioma.

Case 6. Figure 14 shows the cut section of a hemangioma of the inner end of the clavicle of two years' duration, excised from a forty year old woman. Figure 15 is a roentgenogram of the specimen, showing bony trabeculae traversing the tumor. Figure 16 shows it to be a cavernous hemangioma. The patient was free from recurrence eleven years later.

Benign giant cell tumor. It is a question whether benign giant cell tumor should be classified as a neoplasm, but it is of such diagnostic importance in connection with the other tumors that it must receive some consideration. Most of the lesions occur in early adult life or middle age, and affect the end of the shaft and the epiphyses. Short and flat bones are rarely involved. Cancellous bone is destroyed first and then the cortex from within out. The outline of the lesion is usually fairly even and sharp in contrast with the more irregular and worm-eaten outline of malignant tumors. During the progressive period of the disease the surrounding new bone rarely proliferates to an extent which is demonstrable in the roentgenogram. This is in marked contrast with the extensive ossification about certain malignant tumors. However, when the tumor has reached great dimensions and its growth is retarded, a shell of bone may form about it from the distended peristemum and ossification of the peripheral portion of the tumor may take place. Spongy ossification within the tumor frequently follows pathologic fracture and it may be very extensive, although the new bone may be so light that it casts little or no shadow in the roentgenogram. The greatest difficulty in diagnosis of benign cell tumor is to distinguish between it and the early stages of central nonossifying sarcoma in adults. X-ray appearances may be almost identical and biopsy may be necessary in order to settle the point.

Malignant tumors. Primary malignancies of bone are best classified according to the type of tissue into which they tend to become differentiated. This classification is not entirely satisfactory and leaves a considerable number of bone sarcomas unclassified. According to tissue type we may distinguish osteogenic sarcoma, chondrosarcoma, fibrosarcoma, myxosarcoma and angiosarcoma. Among the unclassified tumors is the undifferentiated round cell sarcoma or Ewing sarcoma which, because of its not infrequently favorable response to treatment, is of considerable clinical importance.

Osteogenic sarcomas are tumors arising from bone-forming cells and undergoing tumor ossification. They usually arise centrally, but may begin peripherally. Old bone is eroded and replaced by tumor. Ossification occurs in it and the amount of new bone and its degree of maturation vary extremely in different tumors. In some cases it is slight, while in others it is extreme. When extreme, it usually has a spongy arrangement and when less marked it is often radiating. The tumor bone may be very atypical and immature or it may so nearly approach maturity that microscopically it can not be distinguished from normal bone.

Chondrosarcoma, though much less frequent, is as definite an entity as osteogenic sarcoma. The mere finding of cartilage in a sarcoma is insufficient ground for calling it a chondrosarcoma, as cartilage may appear in the process of ossification of peripheral or periosteal osteogenic sarcoma just as it may in the peripheral callus of a fracture or the involucrum of an osteomyelitis. Chondrosarcomas are centrally destructive malignant lesions, in which the tumor tissue remains cartilaginous or undergoes a certain amount of calcification and ossification. A characteristic feature of the shadows cast by such areas are that they are blotchy and irregularly arranged. Separate islands of calcification or ossification shown by roentgenogram in malignant tumors are always highly suggestive of chondrosarcoma.

Fibrosarcomas are as a rule centrally situated although periosteal fibrosarcoma is occasionally encountered. There is usually central destruction of cancellous bone and of cortex, producing an area of reduced density in the roentgenogram which is ragged in outline, making it highly suggestive of malignancy. There is no tumor ossification and usually very little nontumorous ossification on the part of periosteum or endosteum about the lesion. Microscopically the fibrosarcoma is composed mainly of spindle cells, although round cells and small giant cells may also be present. The intercellular substance may contain fibrillæ. It is difficult to say that, if a tumor of this cytologic type were to mature, it would not ossify, indicating osteogenic sarcoma. ·But in many cases there is no ossification and one is more justified in assuming that the tumor arose from fibroblasts than from osteoblasts.

Certain authors have made a subdivision of angiosarcomas of bone because of the extreme vascularity of some tumors and because of the tendency of tumor cells to form the vascular walls and to break down, leaving large cavities filled with blood. These sarcomas may be of blood vascular origin, but this is uncertain and there is some justification for grouping them with unclassified sarcomas.

The *Ewing tumor* of bone is an undifferentiated round cell sarcoma which nearly always begins centrally. It usually destroys bone extensively but in some cases it breaks through the cortex and forms a large peripheral tumor which may involve most of the length of the bone. It is perhaps oftenest seen in the young, where it stimulates marked nontumerous new bone formation. A central lesion may lead to the formation of a marked involucrum from the periosteum in the vicinity of the growth. As the tumor spreads, there may be a second or third layer of bone formed in the periosteum, giving the involucrum a laminated character. This type of tumor is sometimes multiple and, while it is uncertain whether the tumor arises singly or multiple, in all probability the multiplicity of bone lesions is to be accounted for on a metastatic basis. Ewing tumors in adults produce bone destruction without new bone formation and are hard to differentiate roentgenologically from central fibrosarcomas or from central osteogenic sarcomas that undergo little ossification.

Parosteal undifferentiated round cell sarcomas of precisely the same histologic appearance as those of bone are not infrequently met with. The important feature about the entire group of undifferentiated round cell sarcomas is their favorable response to therapy. I have recently traced five tumors of this type, two osteal and three parosteal, which have remained free from evidence of recurrence from three to eight and three-fourths years after treatment by various combinations of operation and radiotherapy.

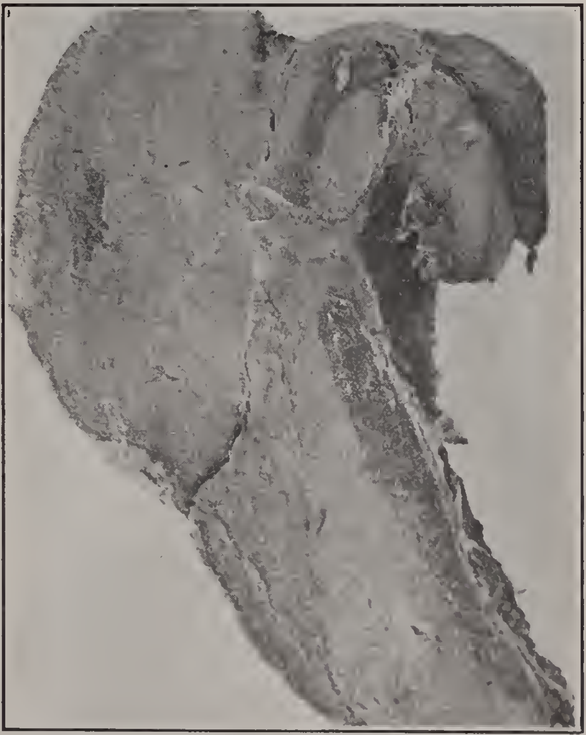

Fig. 17. Cut section of undifferentiated round cell sarcoma of retroscapular region obtained by amputation.

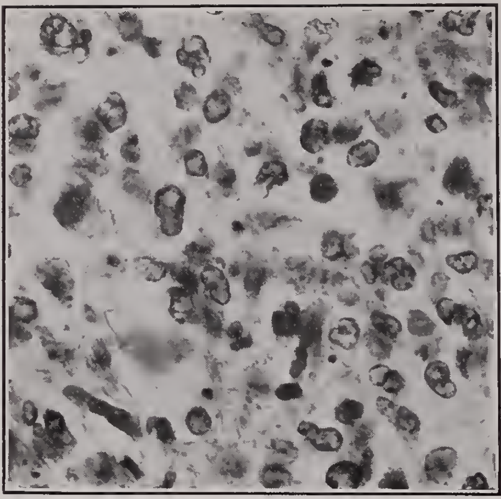

Fig. 18. Photomicrograph of tumor in fig. 17.

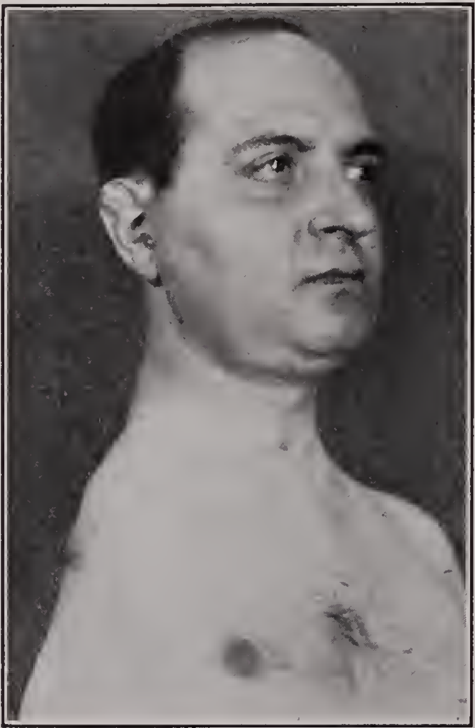

Fig. 19. Photograph of patient, well eight and one-half years after operation.

Case 7. This is a male, age 29, a large parosteal sarcoma of the retroscapular region of seven months' duration eroding the bone from without. It was treated by intrathoracoscapular amputation. Figure 17 is a photograph and figure 18 a photomicrograph of the specimen. The patient was alive and well eight and one-half years later (fig. 19).

Case 8. Another case is that of a woman, age 44. A parosteal sarcoma of the inferior part of the arm was treated by high voltage x-ray, followed one week later by local excision of the tumor and 1000 mg. hrs. of radium. The patient was alive and well six years and two months after operation.

Case 9. Woman, age 56, had a large undifferentiated round cell sarcoma of the left ischium which after biopsy received two radium treatments of 1300 mg. hrs. of radium, three weeks apart. This was followed by four series of eight treatments each of low voltage x-ray during the next year. The tumor disappeared and the ischium reossified. The patient was well five years and three months from the onset of the treatment.

Case 10. Woman, age 30, had parosteal sarcoma beneath the left deltoid. Two high voltage x-ray treatments were given three weeks apart, after which the tumor was excised and 1500 mg. hrs. of radium treatment were given in the open wound. The wound healed and the patient was free from evidence of recurrence four years and six months later.

Case 11. Male, age 35. Had an undifferentiated round cell sarcoma of the right clavicle which resulted in a pathologic fracture. Four treatments were given with low voltage x-ray, followed two months later by two treatments of high voltage x-ray. This lead to healing of the fracture and disappearance of the surrounding soft tumor. Five months after treatment was begun the clavicle was excised. No remaining tumor could be found. The patient was free from recurrence three and three-fourths years after treatment was begun.

Despite the favorable response of this group to treatment, the majority of bone sarcomas have made metastases before the primary tumor is recognized and treated. Consequently one of the most important points in the management of bone tumors is the recognition of the benign lesions and their treatment by appropriate operative measures. Amputation for benign tumors is rarely necessary and x-ray treatment does no good.

GOLF BALLS AS A SOURCE OF LEAD POISONING. H. W. Wuerthele, Pittsburgh (*Journal A. M. A.*, Dec. 22, 1928), reports the case of a school boy, aged 16, white, who complained of severe abdominal cramps that he had had for two weeks. Th ecramps, starting from the lower quadrant of the abdomen, extended down the legs to the feet and lasted from five to ten minutes. These occurred at irregular times, and there were as many as from four to five paroxysms in a day. August 5, the cramps started while the patient was caddying at the golf links and lasted from 1:45 to 5 p.m. They were so severe that the patient was unable to walk and had to lie on the ground. He then started to walk home and had to hold the abdomen with his hnads while walking. He did not have any vertigo, headaches or syncope. There was no cough, shortness of breath or palpitation of the heart, and nausea, vomiting and eructation were absent. The bowels were regular. Genitourinary examination did not reveal burning, frequency or nocturia. There was no numbness, or tingling of the extremities. The patient complained of fatigue after the paroxysms. The abdomen was retracted, boardlike and very muscular. The urine was a clear amber with a specific gravity of 1.025; it was negative for sugar and albumin. Microscopic examination did not show any casts or red blood cells. The red blood cells numbered 5,250,000, and the white blood cells, $10,150, with polymorphoneuclears, 80 per cent; lymphocytes, 20 per cent, and hemglooin, 95 per cent. There were no stippled cells seen; poikylocytosis and anisocytosis were absent. The Wassermann reaction was negative. A diagnosis of acute lead poisoning was made. The syndrome was that of lead poisoning and Wuerthele questioned the patient closely as to the possible source of exposure to lead. After three days of questioning, the author found that the boy had been cutting open golf balls and rubbing the lead contained in a little rubber sac onto old balls that he had found about the links and that he was preparing for sale to some of the golf players for practice balls.

UNDULANT OR MALTA FEVER

AN OUTBREAK IN OREGON *

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We wish to report an outbreak of undulant or malta fever that occurred at the Oregon State Tuberculosis Hospital, Salem, in May, 1928. So far as we know these cases present the first instances in Oregon, where the existence of undulant fever in man has been recognized and studied during its clinical course. P. M. Drake, Health Officer of Coos County, reported to us by personal correspondence a case which occurred early in 1927.

Malta fever has been known since ancient times. Until more recent years it was more conspicuously present in the Mediterranean countries and especially on the Isle of Malta, where it is definitely associated with the raising of goats and the use of their milk.

A better and more descriptive term is undulant fever because of the peculiar type of fever present in the typical cases. It is also known as rock fever, Mediterranean fever, Mediterranean phthisis. In northern Mexico among the goat herders it is known as goat fever and in the infected areas of Texas it is known as dust fever with the idea that it is caused from the dust of infected goat pens. It is sometimes called Bruce's septicemia after the discoverer of its specific cause.

The causative organism of undulant fever was first isolated by Bruce,[2] in 1887, from the spleens of human cases dead from the fever in the Island of Malta. It was not until 1893 that he called this organism micrococcus melitensis. That the organism was a coccus was the belief of many bacteriologists until Evans,[8] in 1918, demonstrated conclusively that in form the organism was bacillary. She showed that, while certain strains were characterized morphologically by a predominance of coccoid cells, most of the strains were distinctly bacillary.

It was Evans who pointed out the close relationship of the melitensis organism to the bacillus abortus (Bang). The latter had been isolated by Bang,[1] in 1897, and was definitely associated with contagious abortion in cattle.[23] Meyer and Shaw,[19] in 1920, concluded that the organism, causing undulant fever in man and Malta fever in goats, could not be distinguished morphologically or biochemically from the organisms responsible for infectious abortion in domesticated animals. Meyer and his coworkers approved the suggestion of Evans that the name brucella be given to this group of organisms.

The brucellæ are minute rods with many coccoid cells. They do not form spores; are nonmotile; are aerobic, or prefer a slightly reduced oxygen tension; do not liquefy gelatin; are Gram-negative; and do not ferment carbohydrates with gas or acid formation.

By cross agglutination and by absorption of agglutinins it is possible to determine whether a given organism is brucella abortus or melitensis. By means of absorption tests Meyer and Feusier[20] divided the brucellæ into four serologic groups. All B. abortus strains belonged, according to these workers, to group 1. Groups 1 and 2 were closely related but also sharply defined from groups 3 and 4. In a more exhaustive study, using forty-nine strains, Evans[9] differentiated the brucellæ into seven serologic groups. Four of these included only one or two strains each and were relatively unimportant. The majority of bovine and porcine strains (30 strains) she placed in one large group, designated as variety abortus. Two strains of human origin were in this group. She designated another group as variety melitensis A, and included strains of human, bovine, caprine and equine origin. A third group she designated as variety melitensis B. This group was characterized morphologically by a predominance of coccoid cells and was undoubtedly the organism Bruce worked with.

Absorption tests performed on the serum of the first recognized case of undulant fever at the State Tuberculosis Hospital showed that the causative organism of the Salem outbreak was B. abortus. While the B. melitensis gave some agglutination with the sera of the persons who reacted, invariably the B. abortus was agglutinated in a higher dilution. The strain of B. abortus used was No. 80, that of B. melitensis being No. 428. Both were obtained from Dr. K. F. Meyer.

A study of this outbreak justifies the conclusion that an agglutination titre of less than 1-100 may be diagnostic, provided the clinical symptoms are suggestive of undulant fever. Workers are of divided opinion as to what titre should be considered

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of diagnostic value. Thus Watkins and Lake,[24] in describing an epidemic of Malta fever at Phoenix, Arizona, due to the use of raw goat's milk, did not count a person a case unless his serum gave agglutination in a dilution of 1-100 or higher. Sensenich and Giordano,[22] in reporting seven cases of undulant fever, accepted agglutination above 1-50 as specific. Hardy[13] believes that agglutination in a titre of less than 1-80 has little diagnostic value. On the other hand, Carpenter[4] reported two cases in which B. abortus was obtained in blood cultures and in which agglutination did not occur even in a dilution of 1-5.

The complement fixation reaction has been used by some workers in place of the agglutination test. Larson and Sedgwick[16] thus examined the blood of 425 children and infants, and found 17 per cent gave fixation with B. abortus as the antigen. On the other hand, Madsen,[17] in a study made at the Serologic Institute, Denmark, showed that, although the blood of 121 children was examined for B. abortus agglutinins, none were found in children under eight years of age. He further states that no case of undulant fever was ever observed in hospitals and asylums for children in Copenhagen or elsewhere, where raw milk is used in large quantities. It is generally agreed that the agglutination test has greater diagnostic value than the complement fixation reaction, in so far as undulant fever is concerned.

Actual isolation of the organism from the blood will, of course, clinch the diagnosis. The brucellæ, however, are rather difficult to culture from blood, although they grow well on ordinary media when once isolated. Due to an unfortunate accident, the only blood culture obtained in this outbreak showing growth was lost.

To ascertain the agglutinin content of normal sera for the brucella abortus, tests were made on specimens received routinely in the State Hygienic Laboratory for the Wassermann reaction. Of 422 sera studied, 28 or 6.6 per cent gave complete agglutination in 1-20 dilution; 7, or 1.7 per cent, in 1-40 dilution; and 3, or 0.7 per cent in 1-80 dilution. All of these sera were inactivated at 56° C. for 30 minutes, incubated in the various dilutions in the 37° C. water bath for four hours, and then left overnight in the refrigerator, when results were read. Hardy,[13] at Iowa, in a study of 287 Wassermann sera, found the following results:

49.0 per cent gave complete agglutination in 1-5 dilution.
30.0 per cent gave complete agglutination in 1-10 dilution.
9.8 per cent gave complete agglutination in 1-20 dilution.
1.4 per cent gave complete agglutination in 1-40 dilution.
9.3 per cent gave complete agglutination in 1-80 dilution.

In a study of a much larger number of Wassermann sera at the Connecticut State Laboratory, McAlpine and Mickle[18] reported the following: Of 10,157 sera tests 63, or 0.6 per cent, showed complete agglutination in 1-100 dilution; 103, or 1.0 per cent, showed agglutination in 1-75 dilution; 94, or 0.9 per cent, in 1-50 dilution; and 157, or 1.5 per cent, in 1-25 dilution. Watkins and Lake reported two out of 480 Wassermann sera giving agglutination with B. melitensis in a dilution of 1-100.

Undulant fever presents a problem of great importance to the public health. As far back as 1905, Craig[7] said, "I am convinced that a careful study by the use of the Widal test and the agglutination reaction with B. melitensis of many of the cases of obscure continual fevers which are prevalent in this country will result in the demonstration that Malta fever is by no means a rare disease in the warmer portions of the United States, and that many of the so-called anomalous cases of typhoid fever are in reality instances of infection with the organism of Malta fever."

Madsen[17] is of the opinion that in Denmark infection with B. abortus is more frequent than with typhoid or paratyphoid. Of 2500 sera received at the Serologic Institute for the Widal test, 222 gave typical agglutination reaction with B. abortus in at least 1-100 dilution. In 27 cases blood cultures were taken and in 18 B. abortus was isolated. Hull and Black[14] of the Illinois State Department of Health, report that of 69 specimens negative for the Widal test, agglutination with the brucella was obtained in 5 specimens in 1-200 or higher dilutions; in 1 in 1-50 dilution; and in 5 in 1-25 dilution.

Hardy[13] reports that out of 783 tests for undulant fever made on specimens received at the Iowa State Laboratory for the Widal test, 68 gave positive agglutination; of which 31 were confirmed positive cases. He is led to believe, therefore, that in Iowa undulant fever presents a health problem comparable to that of typhoid.

In the Oregon State Hygienic Laboratory, of 44 specimens received for the Widal test, five were distinctly positive for B. abortus. In each case the agglutination titre was high. Two sera gave complete agglutination in 1-640; 1 in 1-1,280; 1 in

1-2,560; and 1 in 1-5,120. Each one of these cases was clinically diagnosed undulant fever. Two sera also gave agglutination in 1-80 dilution, and one in 1-20 dilution. Of the two 1-80 reactors, one also gave agglutination in 1-80 with B. paratyphosus B, and one in 1-80 with B. typhosus. We are unable, at the present time, to explain the significance of these reactions, although the coexistence of a second infection is not improbable. Carpenter[4] reports the isolation of B. typhosus from the blood of a patient suffering from undulant fever.

When Craig[7] gave his opinion as to the importance of undulant fever in this country he reported a case and since then clinical reports have come along with the laboratory work outlined above. In 1911 Gentry and Ferenbaugh[11] described their investigations of a disease among the goat herders of Texas which they proved to be undulant fever. They stated that physicians of the southwest had for twenty-five years has been observing undulant fever under various names such as "slow fever," "Rio Grande fever" and "mountain fever."

The first epidemic in this country occurred at Phœnix, Arizona, in 1922, and involved thirty-seven cases. This group was carefully studied and reported by Watkins and Lake.[24] The infection came from raw goat's milk. Two of the thirty-seven cases were fatal but the undulant fever was a complication of other chronic conditions. The cases were of all grades of clinical disease from ambulant to fatal. The more severe bed cases were ill to some degree from six months to a year and some of the chronic cases still showed symptoms after several years. The authors traced three additional cases to laboratory infection from a strain isolated from one of these cases.

All of the recent studies support the opinion that undulant fever may be derived from a number of animal sources, goats, sheep, swine, cattle, horses and mules, the principal ones being goats, cattle and swine. Its identification with the abortus strain of the organism found in cattle and swine dates from 1924, when Keefer[15] reported a case in Baltimore of swine origin. In 1927 Miss Evans[10] collected and studied twenty cases of this type from cattle or swine. It seems conclusive that the disease may be transmitted to man by the use of raw milk from cows infected with contagious abortion. The frequency of the disease among laboratory workers is striking. The case worked out in Baltimore occurred in a helper, whose duty it was to bring pig embryoes from a packing plant to the Johns Hopkins Medical School. Reports of cases from handling cultures are given rather frequently in the literature on the subject.

The prognosis as to life is good. The mortality is approximately 2 per cent. It is, however, a very long drawn-out affair, averaging around three months in duration and ranging from two months to two years with a very strong tendency to relapse.

The incubation when the infection progresses directly to clinical manifestations is around ten days to two weeks. A number of studies in animals and the usual experience in testing dairy cattle show that many animals are infected so as to give positive agglutination tests and yet do not suffer any special manifestations of the disease. Several such experiences in humans are recorded in the medical literature and no doubt every serologic study in man brings out these nonclinical reactors, whose position in the problem is a matter of dispute. In our own group of 180 patients who were present at the Oregon State Tuberculosis Hospital before pasteurization of milk was started, 43 reacted to some degree. It seems possible that some cases might carry infection for an indefinite time before actual clinical manifestations commence, if they ever do. Several of our group of reactors support this view, although such a point is barely suggested and no case entirely acceptable from a clinical point has yet proven such indefinite incubation in our group. There is some support for it in the literature but it is not stated with sufficient clearness to be used as evidence.

When the organism becomes established in the body it is most commonly found in the blood, urine and spleen. The original case of this outbreak yielded a culture from the blood. The other four gave blood cultures that were negative or contaminated. Efforts to recover the organism from the urine by culture in three of the cases have failed. Four of them now have urine specimens injected into guinea pigs. No spleen punctures have been tried.

The diagnosis ordinarily rests on agglutination tests of the blood serum, blood culture and the clinical picture. In this group the clinical picture and the serum reaction have been mostly used. All studies that have been made in human as well as veterinary practice point to the reliability of the agglutination test. At the same time it has been definitely proven that an occasional clinical case will not react.

In looking at our group of reactors from a clinical standpoint, it does not seem that any certain titre limits can be given for clinical or nonclinical cases. Out of our forty-three reactors, five have been reported as clinical cases. These react as follows: one in a titre of 1-2,560; three in a titre, 1-80, and one of them in 1-40. Three more are considered suspicious because of symptoms too mild and vague to be classed as clinically acceptable.

The symptoms are frequent, unusual headache, slight malaise, loss of weight and loss of appetite. This clinical picture does not seem to be explained by the tuberculosis which they have. They react in titres of 1-160, 1-80 and 1-20. Of the remaining thirty-five, a few have some malaise, a little out of harmony with their tuberculosis and some unusual headache. The majority have been under observation as constant hospital residents for five months, with special clinical check-up at least three times without being brought under suspicion.

It is interesting to note that three with titres of 1-160 and 1 with 1-640 are and have been entirely free from symptoms of any kind that could be placed under undulant fever. Taking the 43 reactors as a group, 23 react with a titre of less than 1-50, 8 from 1-50 up to 1-100; 8 from 1-100 up to 1-200 and 4 to 1-200 or over. Two of the last four as a matter of fact are well over 1-500. One of them is our original clinical case and the other refuses to give us the least encouragement toward a clinical position.

The classical clinical picture was presented by our original case. At first tuberculosis was suspected, then typhoid and he happened to give a positive Widal. Finally he was diagnosed undulant fever by Dr. H. K. Stockwell of Salem. He presented a long standing and persistent malaise, loss of appetite, undulant fever reaching over 103°, extreme sweats especially at night, very persistent headache which would not yield to the ordinary drugs, chilliness, restlessness, moderately severe backache and finally moderate anemia and loss of weight. The headache was persistent for three weeks. The sweats were very persistent and unpleasant. The symptoms continued with only several short remissions for nearly three months. Then after a month of fairly good health he developed an orchitis and was actively ill for a week.

Persistent headache, extreme sweats and chilliness along with a fever which is apt to be undulant in type seem to be the outstanding clinical symptoms. The pulse is often comparatively slow. The general appearance is apt to be better than one would expect from the symptoms. No localization of symptoms occurs unless complications develop. The spleen is said to be enlarged in 25 per cent of the clinical cases. This was not found in any of the cases in our group. The blood shows a slight reduction of reds, normal or reduced number of whites, moderate reduction of hemoglobin; and the whites show a relative increase of monocytes or large mononuclears.

The condition must be differentiated from paratyphoid, typhoid, malaria, tuberculosis, influenza and other septicemias. A suspicious prolonged fever, in which the above conditions are excluded, should be examined by serum agglutination for undulant fever. If the case remains in doubt, cultures should be made from the blood, the urine or from any local effusions, if they should develop. Also in confirmed cases, cultures should be obtained if possible in order to establish scientific proof and give a chance for scientific research.

In our original case two culture tubes of glycerine agar were swabbed with material, when the orchitis developed and was drained. Discrete colonies of staphylococcus were obtained but no abortus organism.

Orchitis is the commonest complication. Nosebleed is given as fairly common in the texts. It was not seen in our few cases. Joint effusion is fairly common; pneumonia and pleurisy with effusion is also given as fairly common. The more serious or fatal cases are especially apt to develop pneumonia.

In conjunction with the story of this outbreak it seems worth while to take a look at the dairyman's problem in this state. The State Bureau of Animal Husbandry and the Oregon Agricultural College are very much alive to the problem which contagious abortion in cattle presents. Until recently they have not considered it from a standpoint of menace to human beings. The agricultural college has carried on extensive work looking to the control of contagious abortion in cattle. They have worked out principles of control so that intelligent and cooperative owners are able to eliminate the disease from herds with comparatively small loss.

Contagious abortion apparently started in the herd at the State Tuberculosis Hospital about March, 1927. As is usually the case in newly infected herds, abortion was very common for the first six months. After that a few calves were lost but the herd in general continued in good health and produced a fairly normal quantity of milk. The agricultural college follows a conservative rule in judging reactors among dairy cattle. It considers those that react to 1-50 but not to 1-100 as doubtful. However, we noticed that in our herd the doubtfuls had mostly become reactors when they were retested a year later. We are informed that this is the usual experience.

A few cows seem immune and remain nonreactors, even when in an infected herd. A few having reacted may become nonreactors, but the large majority of cows that once become reactors continue to be so. They are not only a serious loss by their own account but they act as carriers and spread the disease to contact animals. They are also beyond any question a menace to human beings, especially if their milk is used for consumption without pasteurization.

There seems to be ample proof that society should demand dairy herds free from contagious abortion, just as it does that they be free from tuberculosis. It is already time that dairymen test their herds and purchase new stock on the basis of a test for abortus infection, just as they have been doing for tuberculosis. Incidentally society has another reason for demanding properly pasteurized milk exclusively.

Our first clinical case that was recognized became ill on May 4. He has just now, after four and a half months, recovered sufficiently to do some work. Our second case became ill May 12, ran a fairly marked course, with recovery from his acute symptoms, such as extreme sweats, marked persistent headache, chilliness and joint pains. He died three months later of pulmonary hemorrhage due to tuberculosis. Our third case has a less definite onset because of active clinical symptoms from tuberculosis which blended in with the picture of undulant fever. She was apparently back to a clinical status due to tuberculosis in approximately two months, although during recent weeks, roughly three and a half months after the onset, she has had a recurrence of slight temperature and joint pains. On June 16 her agglutination titre was 1-50, on July 11, 1-40 and on September 4, 1-80.

The other two cases have had a less definite onset and are free from clinical symptoms at present. One showed an ascending agglutination titre 1-20, 1-40 and 1-80 in the course of three months. The other was tested once on June 25 and showed 1-80. All of the cases had intermittent fever, headache, joint or muscle pains and malaise.

Our group of reactors are under constant hospital observation, and offer many interesting possibilities that will be followed up from a clinical and laboratory standpoint. As stated before, it seems quite possible that several of them will yet fall into the positive clinical group. Incidentally we have had seven reactors enter the institution since this work started who are not included in our studied group. Such infection as they may have was received outside the institution.

Clinical cases supported by agglutination tests are being brought to light in various parts of the state. A fatal case in a boy, aged 12, occurred near Astoria. At least four have been diagnosed in the vicinity of Salem outside of the institution. One has occurred in Coos County. There seems no reason to doubt undulant fever is quite general in the United States and that many cases, especially in the section away from the Mexican border, are due to B. abortus from cattle.

The treatment is largely general care along lines suggested for typhoid fever. The literature shows considerable enthusiasm for certain special treatment in case reports covering single or a few cases. In larger groups or case studies a much more conservative tone is noted. There is no objection to the usual remedies for relief of symptoms when necessary. Of the drugs recommended for the toxemia, quinine and mercury are used but neither has any special reports to prove its value. Intravenous use of acriflavine, neoarsphenamine or mercurochrome is mentioned. Mercurochrome appears rather frequently in the literature and has some enthusiastic claims to its credit. It causes considerable general reaction and has not been generally accepted. Vaccines both autogenous and from stock have been used and are rather widely recommended. Several references point to them as of no value. If they are used, the conclusion that they be used during milder stages of the disease or very small doses if in the active stages seems justified.

Dr. H. K. Meyer in a personal message through Dr. Marr Bisaillon expresses the opinion that vaccines influence practically every case favorably. He suggests doses starting with 100,000, doubling each dose. Give once a day until a reaction is obtained, then every five days. Guiffre[12] expresses the same opinion but gives no dosage. Cowry[6] doubts the value of vaccines. He advises that they be used cautiously in doses not exceeding two and a half million.

In the "Answer to Queries" section of the *J. A. M. A.* for September 8,1928, the editor says that the disease can be prevented by subcutaneous injections of killed cultures and "it is worth while in protracted cases with low fever to attempt shortening the duration of the disease by employing sensitized vaccine to stimulate the defensive powers of the system best used when the temperature is falling and during intervals of apyrexia. An initial dose of 10 million is given and gradually increased at intervals of four or five days to 50 million or even 100 million."

Owen and Newham[21] claim success in a single case by autogenous vaccine. They gave 200 million at intervals of ten days. Byam[3] also claims success in a single case by stock vaccine starting with one million and increasing every four or five days until 30 million is reached.

SUMMARY AND CONCLUSIONS

An outbreak of undulant fever at the Oregon State Tuberculosis Hospital was found to have been caused by B. abortus. These are the first recorded cases in Oregon, although there undoubtedly have been many cases where correct diagnoses were not made. In a study of forty-five specimens received at the State Hygienic Laboratory for the Widal test, where typhoid or paratyphoid alone were suspected, five specimens, or 11 per cent, gave diagnostic agglutination with B. abortus.

It should be recognized that some persons may have agglutinins for the brucella, yet not indicate evidence of undulant fever infection. In a series of 422 Wassermann sera subjected to the B. abortus agglutination test, 28, or 6.6 per cent, gave complete agglutination in 1-20 dilution; 7, or 1.7 per cent, gave complete agglutination in 1-40 dilution; and 3, or 0.7 per cent, gave complete agglutination in 1-80 dilution. In the series of cases at the State Tuberculosis Hospital, four gave complete agglutination with B. abortus in low dilutions, yet clinically the cases were undeniably undulant fever. Both laboratory and clinical evidence must be obtained to rule out diseases with which it may be confused, and then laboratory evidence must be obtained to support the diagnosis of undulant fever.

Undulant fever is caused by the ingestion of raw milk or cream from cattle infected with the organism causing contagious abortion, B. abortus. Since the brucellæ are destroyed at 142° for fifteen minutes,[5] infection in man may be prevented by the proper pasteurization of milk and cream.

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MALTA FEVER

REPORT OF FATAL CASE AND COMMENTS *

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There have recently been six cases of Malta or undulant fever in Oregon with two deaths, as reported from information received of the Oregon State Board of Health. Of the two fatal cases, the other occurring in Salem, this is one.

A moderately well nourished boy of 12 years had been living with mother and three members of the family in an isolated district in the hills on a farm. Goats had pastured on the place the year before but had not been seen since. Out of a herd of nine cattle three were affected with septic abortion during the past year, the latest occurring six weeks before the boy took ill. All members of the family drank fresh cow's milk but the boy was the only one affected.

On July 12 he took suddenly ill with chills and fever. On July 15 a local physician was called. His condition became serious and another consultant was called. He was now delirious. A blood sample was sent to the Oregon State Hygienic Laboratory which reported a negative Widal but a positive agglutination test with B. melitensis in a dilution of 1:320.

On July 22 he was sent to a local hospital, where another sample of blood was withdrawn for a check test and blood culture. The check test at the Oregon Hygienic Laboratory gave an agglutination with B. melitensis in a dilution of 1:640. The blood culture locally showed a definite micrococcus in pure culture with delicate staining properties.

On his entry at the hospital the patient had a septic look and a quiet, motionless expression. His face was flushed, perspiration was intense, he was unable to move his arms to feed himself or roll over in bed. The arms were folded and fixed by a severe arthritis in the shoulders and elbows. The knees and ankles were affected. The arthritis generally was more intraarticular than periarticular except in the right ankle which was red and swollen and affected with an arthritis and perarthritis combined.

There was congestion in both lung bases without consolidation. The abdomen was not tender, the spleen was not enlarged. There was a whistling

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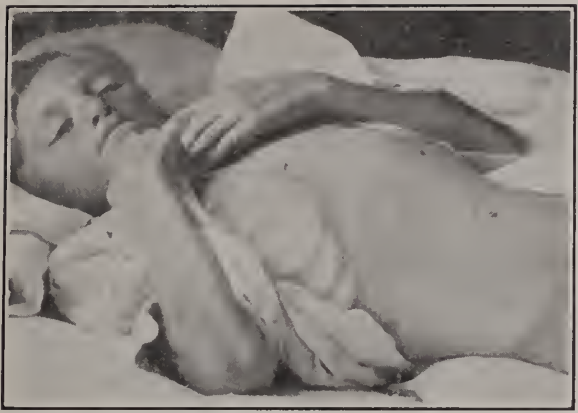

Showing fixed position of Malta fever patient. He was unable to move the arms, feed himself or roll over in bed. Sudamina over body, due to the intense perspiration.

mitral murmur of high pitch; a few days later this murmur disappeared. The neck was free and movable, the mind clear, the eyes reacting normally to light and accommodation. There was a pronounced rash, consisting of reddish papules and small round vesicles or sudamina, mostly over the back, chest and trunk. The fever continued high of the septic type but did not go over 103°. The pulse varied from 120 to 140. The urine examination was negative, the leucocyte count was 14,000 with nothing characteristic in the differential.

After a few days in the hospital the patient seemed to recover. He could roll over on his side and take a glass of water. On July 29 he began perspiring again. This continued throughout the day, sweating was intense; he just dripped. Towards evening the expression became anxious and he collapsed. At the end the heart beats were irregular, the lungs filled with congestion and edema. He expired July 29, on the seventeenth day of illness. Postmortem was refused.

The above case history is strongly suggestive of the infection coming from cow's milk. There had been no goats about the place for one year, neither did the family import other milk or butter. Extracts from recent literature indicate strongly that B. melitensis and B. abortus in cattle are identical. Quoting a survey of the literature on the subject by Strong,[1] "The pathogenicity of B. melitensis for cattle is highly probable and represents a serious economic problem, involving the desirability of extensive prophylactic measures to prevent contagion from cattle to man, and from man to cattle or sheep, and perhaps other mammals."

This view is also supported by Stitt,[2] who says, "Recent studies on the serologic relations of B. abortus and B. melitensis show that these two organisms are closely related, if they are not identical." From an observer from Prof. Schuffer's Clinic[3] in Italy we have the following abstract: "So, too, it was demonstrated by my school that no distinction can be made either clinically or bacteriologically between the bacillus abortus of Bang and Bruce's micrococcus." He believes, further, that Malta fever produces apical lesions resembling tuberculosis, a hemorrhagic syndrome, icteric syndrome, etc.

The symptoms of Malta fever are quite varied and may simulate nearly all of the infectious fevers. Castellani and Chalmers[4] divide undulant fever into four types: (1) Typical, lasting from a few months to two years, (2) malignant, fatal in two weeks, (3) intermittent, (4) ambulatory. The complications consist of orchitis, pneumonia, intestinal ulcers, hemorrhages and occasionally periostitis.

That undulant or Malta fever is easily mistaken for typhoid fever was recently observed by Hardy,[5] who subjected all samples of human blood sent to the Iowa State Hygienic Laboratory for the Widal test to the agglutination test for undulant fever as well. The results were astonishing and disquieting. Forty-one cases of typhoid fever were diagnosed and thirty-eight of Malta fever. The Malta fever cases were later confirmed clinically and bacteriologically in thirty-one cases.

In the State of Oregon, according to Veterinary Commisioner W. H. Lytle, from 5 to 10 per cent of the cattle in the Willamette Valley are affected with septic abortion. In Clatsop County Dr. J. F. Rankin, veterinarian, Astoria, examined 1500 head of cattle with the finding that from 20 to 25 per cent were reactors to the bacillus abortus. He states further that the problem is a great one and that the public should not be too hastily alarmed over the situation.

Perhaps there is no great need for alarm, for the disease has in all probability existed in Oregon for many years without being recognized. That there must be a strong natural immunity to the disease is quite evident or more people would be affected. It is suggested, however, that in the future in all cases of obscure fever, slight, remittant or otherwise which present difficulty in diagnosis and in typhoid cases that a blood culture be taken and that same be subjected to the agglutination test for B. melitensis. Should many cases be brought to light in Oregon, pasteurization of milk would be a good public health measure. The problem is a great one and needs further investigation.

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CARDIOVASCULAR SYPHILIS*

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The cardiovascular complications of syphilis steal upon their victims generally long after the initial chancre has been forgotten. The harum-scarum youth of eighteen or twenty is but little disturbed either physically or financially by his initial lesion. But ten or twenty years later, when he has attained social and commercial prominence, fate, in the guise of an aneurysm or an aortitis, lays her hands upon him. Stricken at the height of his career, he sees his family impoverished and his business possibly destroyed as a result of his youthful folly.

Thus does cardiovascular syphilis strike down its victims in their prime, when they are at the peak of their productiveness. Thus does it constitute an important economic problem. The bread-winners of the family especially are attacked, as the proportion of males involved as to females is as four to one. This predilection for the male is probably due to the greater strain thrown upon the cardiovascular apparatus of the male by the type of work which he does.

Besides the spirochete, the etiologic factors in the production of cardiovascular syphilis are late diagnosis of the syphilis, insufficient treatment early in its course, insults to the vascular mechanism during the period of spirochetic activity and, lastly, failure to look for and to recognize the early signs of cardiovascular damage.

The darkfield microscope is the most important weapon in our fight against cardiovascular syphilis. If every genital lesion, be it on clergyman or prostitute, were examined by the darkfield microscope, syphilis would be diagnosed at an ideal time and there would be many less hopeless aneurysm and aortitis cases in the hospital wards.

Long continued early treatment is our next important weapon. We are only now reaping the crop of cardiovascular and central nervous system complications caused by the practice of ten to fifteen years ago of giving one, two or three injections of salvarsan and dismissing the patient after one negative Wassermann. We now realize that from one to three years of constant intensive treatment is required to cure syphilis and avoid its late complications, even when treatment is begun at the ideal time. The type of work done during the primary and secondary stage of the disease seems to have some effect upon the localization of complications in later years. The brain worker is somewhat more subject to paresis and the heavy laborer, especially the negro, to aneurysm and aortitis. This theory of the spirachete settling early in tissues subject to heaviest strain is known as "locus minoris resistentiae."

Some authorities feel that vasculotoxic agents, such as foci of infection and alcoholism acting during the stage of spirochetic invasion, favor the location of spirochetes in the heart and aorta. A main factor in the development of late hopeless complications is our failure to seek for the early signs and symptoms warning us of impending disaster. For instance, we may lightly designate a substernal pain as pleurisy or indigestion only to find, four or five years later, that it was the earliest sign of an aneurysm, arrestable at that time but hopeless now.

The pathology of all syphilis from the chancre to late paresis is a perivascular inflammatory reaction. Therefore, one wonders not why so many syphilitics develop vascular complications, but rather how any syphilitic ever escapes them. The earliest involvement of the heart and great vessels often occurs at the root of the aorta. Although the conception is probably not absolutely correct, I like to think of the pathologic process extending from there in any one or all of three directions. Extension upward into the walls of the aorta produces aortitis and later aneurysm. This extension takes place by way of the small nutrient vessels in the adventitia, the vasa vasorum and in the media. The intima is also involved and of late years it has been recognized that involvement takes place around the aorta, producing a periaortitis and mediastinitis.

Aortitis having been produced, the next step is a weakening of the walls with dilatation, producing aneurysm. The process may spread from the root of the aorta onto the valves, producing the well known aortic valve disease. Or, going another way, it may involve the coronary arteries and produce angina. When the coronaries become partially blocked, the nutrition of the myocardium is impaired and an ischemic myocarditis results. Or the whole myocardium may be actually involved by the spirochetes. As one cardiologist has remarked, none of these processes occur singly, but there is generally some involvement of the whole pumping mechanism, producing a pancarditis.

We have all been taught the classical signs and symptoms of these processes. The heaving expansile tumor, tracheal tug, and the bruit of aneurysm;

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*Read before Staff Meeting of Fabiola Hospital, Oakland, Calif., Nov. 1, 1928.

the diastolic murmur, pistol shot femoral sound, dyspnea, and edema of aortic regurgitation; the excruciating pain and collapse of coronary involvement—all of these are textbook pictures. They are pictures also of either previous neglect or medical incompetence. For, when patients have reached these late stages, but little can be accomplished by treatment. We should set our diagnostic efforts back five or ten years and begin our investigations of the cardiovascular system at a time when signs or symptoms are minimal. Every syphilitic should have frequent appraisals of the condition of his heart and aorta. Especially is this true of a patient who comes to us untreated some years after infection. In his case a physical examination should be supplemented by a roentgen ray study, especially fluoroscopy, and possibly electrocardiography.

If we depend upon the Wassermann test for our diagnosis, we will often fail to discover cardiovascular syphilis. For even with the best of technics (the Kolmer) this test is negative in 20 per cent of the cases. This error can be minimized by repeating the test five or six times. Except in very early cases the provocative Wassermann test is absolutely contraindicated.

Early minor signs and symptoms, then, must play an important role if we wish to make our diagnoses early. In aortitis and aortic valve involvement pain is the most common early symptom. This may occur anywhere from the neck down to the epigastrium or it may extend to the arm or back. Substernal or precordial location of the pain is quite common. Where the tendency is toward aortitis and the development of aneurysm, it is more apt to be of a dull aching character but, when the coronaries are involved, it is more apt to be sharp, anginal in character and to radiate to the left arm. Paroxysmal, nocturnal pain with some dyspnea is especially suggestive. Dyspnea, palpitation and indigestion are frequent symptoms and should not be lightly dismissed. Hoarseness, cough and vertigo are seen less frequently.

The earliest physical sign of aortitis or aortic valve involvement is a snappy accentuation of the aortic second sound. Next, a systolic murmur appears; systolic, mind you, not the later diastolic murmur of regurgitation. A broadening of the area of dullness can sometimes be percussed out by the expert but I must confess that personally I depend more upon the x-ray plate and fluoroscope for the demonstration of early widening of the arch. Six foot stereoscopic plates are valuable but often fluoroscopy will demonstrate an expansile pulsation in the weakened aortic wall before it can be shown on a plate. If the width of the great vessels is more than half of that of the heart, syphilitic aortitis should be suspected.

As aortitis is always a precursor of aneurysm, the early signs of aneurysm being the same as those of aortitis. The late classical signs of aneurysm do not need repetition. It is sometimes necessary to differentiate a dilated aorta or an aneurysm from a solid tumor of the mediastinum. Here the fluoroscope is invaluable but it should be born in mind that, when a periaortitis or mediastinal syphilis exists, the aorta may be "frozen" and give the appearance of a tumor at the first examination. A course of mercury and iodides should be given and the fluoroscopic examination should be repeated in four to six weeks. By this time, if the process is syphilitic, the mediastinitis will have been absorbed, the aorta freed and pulsation will be observed.

When the coronaries are involved, the pain is more apt to be sharp and to radiate to the left shoulder and arm. Moreover, there is greater likelihood of signs of myocardial damage such as dyspnea and edema. An electrocardiogram will be of value in such cases in determining the degree of myocardial damage, although, as I understand it, there is no electrocardiographic tracing which is characteristic of syphilis.

When seeking to establish syphilis as the etiologic factor of any cardiovascular disease, the close interrelationship of cardiovascular and neurosyphilis should be remembered. Fifty-four per cent of the cases of cardiovascular syphilis have an associated central nervous system involvement. Spinal punctures, then, are indicated not only to clinch the diagnosis of syphilis, but should also be done in every known case of cardiovascular syphilis to give the patient the benefit of special treatment for any existent central nervous system involvement.

TREATMENT

The treatment of cardiovascular syphilis differs from treatment of syphilis in general because of two factors, the Herxheimer reaction and the so-called therapeutic paradox of healing.

The Herxheimer Reaction. When arsphenamine is injected without preparatory treatment, the spirochetes in various foci are destroyed very rapidly. From their bodies an endotoxin is liberated which produces an edema and swelling around the focus. This reaction is somewhat analogous, at least anatomically, to the focal reaction of flaring up seen around a tubercle of the lungs when too much tuberculin is given. Now, if this flare up occurs around a focus in a coronary artery, the latter may become suddenly blocked and death ensue. Or, if it occurs in the walls of the aorta, the walls may weaken and an aortitis may be converted into an aneurysm. Or an existing aneurysm may suddenly rupture. I have personally seen several deaths from this cause.

The Therapeutic Paradox of Healing. All syphilis heals by fibrosis taking the place of the diseased parenchyma of a viscus. If but little parenchyma is involved, or if the organ involved is an unimportant one, we do not need to worry about the rapidity of healing. If this is caused to take place slowly, compensation proceeds along with it and no damage is produced. In the heart and aorta, however, rapid healing is apt to be fatal. If the usual dose of arsphenamine is given to a patient with any degree of involvement of the aortic valves, the sudden contraction and sclerosis which ensues may produce a serious decompensation. Or in coronary involvement, rapid healing brought on by arsphenamine may cause blocking with sudden death. Aortitis and aneurysm may likewise be adversely influenced.

On account of this paradoxic reaction of healing and on account of Herxheimer reaction, I would say that arsphenamine is absolutely contraindicated in syphilis of the heart or aorta until after long preparation with mercury or bismuth. Extremely early cases are sometimes exceptions to this rule. My own preference is to start with about one month's course of mercury by inunction or injection, followed by two months' of bismuth injections. Not until then, and even then with some fear and trembling, do I give arsphenamine. The initial dose is in milligrams rather than decigrams and is increased cautiously. Iodides are of great value, when given along with the courses of bismuth and mercury. The new combination of bismuth and arsphenamine, bismarsen (bismuth arsphenamine sulphonate) has been well born in the few cases in which I have used it.

In the past the outlook for these patients has been very dismal, largely because of the advanced stage at which treatment was begun. Lately, however, early diagnosis and appropriate specific and nonspecific therapy has made it possible for us to say that many of these unfortunate victims can have the progress of their disease arrested and can be restored to the ranks of wage earners.

PROGNOSIS IN ACUTE CORONARY OCCLUSION *

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The work of Obretzow and Stracheskow[1] in Europe and in this country of Dock and Herrick[2] in 1912 put the subject of acute coronary occlusion on a firm clinical basis. During the past decade, White,[3] Pardee and others have so clarified the topic that the diagnosis of acute coronary occlusion has not only become relatively easy, but is actually being made frequently and with great accuracy. It is a source of satisfaction to know that the great progress which has been made in our knowledge of this interesting subject has been largely due to the work of American clinicians and investigators.

The increasing frequency with which this condition is being recognized makes the subject of prognosis extremely pertinent. All writers are agreed that the condition is a serious one. In fact, this ready acceptance of the great seriousness of the condition has perhaps hampered early investigation into the clinical aspects of acute coronary occlusion. The pathologists of the 19th century recognized coronary occlusion and the resultant cardiac infarction and, furthermore, even at that early date the clinical symptoms were correctly known and interpreted. In fact, Hammer is credited with a correct clinical diagnosis in 1878. The apparent hopelessness of the situation seemed to discourage further investigation. This viewpoint was well expressed by Price[4] as recently as 1918, when he says, "Complete and abrupt closure of a coronary artery is usually fatal. If the vessel be small the patient may recover, but the condition is one which is recognized with difficulty during life."

With the enlightenment of the past ten years it became evident that all of these patients did not die immediately or even soon. In 1912 Herrick had suggested that there was no good reason to believe that a patient with acute coronary occlusion must of necessity die. However, he probably reflected the spirit of the times more accurately when he added later, "Death is the result in nearly all of these cases, yet it may be delayed many days."

No doubt a great many, perhaps most of these individuals who suffer an acute coronary occlusion die either immediately or very soon following the accident. Of those who survive the initial shock and are alive some months or years later, only a few show no effects of the damage done to the myocardium. The majority are left with an impaired cardiac reserve, paralysis due to embolism or some other permanent damage.

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*Read before the Fifty-fourth Annual Meeting of Oregon State Medical Society, Portland, Ore., Sept. 20-22, 1928.

To offset this somewhat gloomy outlook, it is well to recall that as clinicians we are not particularly interested in the mortality rate of those who die immediately or very shortly after the occlusion occurs. Our minds need be concerned only with those patients who are alive when we see them. This removes at once a considerable percentage of those who die of coronary occlusion. In a series of 82 postmortems on patients who were found to have coronary occlusion, Parkinson and Bedford[5] found that 24, or 29 per cent, were brought to the hospital dead. Obviously this percentage need have no bearing on the outlook of those seen alive.

I have analyzed five cases seen during the last three years, in which no other diagnosis than acute coronary occlusion could be made, hoping to point out certain factors which might determine or influence the prognosis, and to find if possible certain clinical data by which one may be guided to a more accurate prognosis in the future.

Of the five cases seen, four were males and one a female. The average age was 66 years. The youngest was 62 years and the oldest 72. Two males and one female are dead and two males are living. The average length of life of those who died was seven days after the accident. The average length of life of those who survived is seventeen months to date. The average length of life of all cases is at present six months.

The age of the patients seemed to have little influence on the prognosis in these five cases. It will be noted that the patients are rather closely grouped as to age in this modest series. White[6] concluded that age made little or no difference in his series. However, Oberhelman and LeCount[7] have shown conclusively that there is a much better collateral coronary circulation in older hearts than in young, and, furthermore, that the collateral circulation is far better developed and more efficient in hearts with coronary sclerosis than in those without. A heart provided with a well developed collateral coronary circulation would seem to be better prepared to withstand the shock of an acute occlusion than one not so equipped. Gross[8] believes that the heart is abundantly supplied with capillary and precapillary anastomoses, which are normally not in use and are inadequate for emergencies but which may become adequate with gradual occlusion. On anatomic and pathologic grounds age would thus seem to have an important bearing on prognosis. Whether clinical experience will bear this out remains to be seen.

The presence of a preexisting heart disease was considered in its relation to prognosis. Three of these patients gave absolutely no history of organic heart disease either by name or symptoms. One is living and two are dead. Two gave a definite history of previous anginal attacks. One of these is dead and one is living. The patient who died, a male, had suffered anginal attacks for a period of seven years. More recently dyspnea and other signs of congestive failure had appeared. The patient who survived gave a history of two definite, moderately severe anginal attacks, induced by exertion about three months prior to the acute occlusion. He had at no time any signs of congestive failure.

Hypertension and its effect has been hard to evaluate. One patient, a male, was known to have had a systolic pressure below 100 mm. Hg. for many years and, as far as was known, had no symptoms referable to his low pressure. This patient is dead. A second patient, male, had two readings recorded during a period of four years prior to his occlusion 138/85, and 142/90 mm. Hg. This patient is living. A third patient, a female, had not had her blood pressure read for a number of years, but did not believe it to be high. Her heart borders were well within normal limits and one would be justified in assuming that she had not suffered any important degree of hypertension. This patient did not survive. A fourth patient, a male, was known to have had a marked hypertension for years, associated with an advanced arteriosclerosis. His heart was of the typical hypertensive type. This patient is dead. The fifth patient had never had his blood pressure read prior to his acute occlusion. His heart was definitely enlarged, free of murmurs and probably was of the type that would be classified as a hypertensive heart. He is living. Of the three patients dead probably only one had any degree of hypertension while one was definitely low. Of the two living one did not have any serious degree of hypertension while one probably did have.

Pain was present in all of my cases and when persistent, recurrent, and not easily controlled by morphine, had a bad significance. Two of these cases died without ever finding relief from terrific retrosternal pain. One, a retired physician 72 years of age, suffered constant, agonizing pain for almost 96 hours in spite of large, repeated doses of morphine. The second patient lived only a few hours and was entirely unrelieved by large doses of morphine. A third suffered repeated attacks of moderately severe pain at varying intervals for ten days, finally becoming free of pain, only to die suddenly on the fifteenth day presumably of embolism. Shock was intimately associated with pain and seemed to have the same serious significance as the type of pain described above.

The appearance of signs of congestive failure, particularly when progressive, usually meant a bad outcome. I have included under this heading dyspnea, gallop rhythm and poor heart tones. All of these findings were present in one or all of those who died, at one time or another during their illness. One patient who recovered developed dyspnea and other signs of congestive failure and at present has a badly impaired cardiac reserve. A falling blood pressure or a constantly maintained low pressure seemed to have the same ominous significance as other signs of a failing myocardium.

Fever and leucocytosis did not seem to alter the outcome at all. One patient who died happened to have practically the same temperature curve and leucocyte count as one who survived. One might expect that this reaction would be more or less proportional to the size of the infarcted area.

Embolism was a factor in two cases. One survived and one died. The patient who died had gone through a rather turbulent ten day period following the acute occlusion and was apparently on the road to recovery, when she suddenly fell over dead in bed after a very comfortable day. The patient who survived suffered a cerebral embolism with a resultant left-sided hemiplegia after six weeks in bed and after more than four weeks of complete freedom from symptoms. This patient had no apparent diminution of his cardiac reserve but has considerable residual paralysis. The possibility of embolism is something which must ever be kept in mind as it is as likely to occur in a mild and otherwise favorable case as in one obviously more serious. The danger of embolism diminishes rapidly after the first few weeks, although, as in the case cited, it may occur relatively late in the course of the disease.

It is of interest to note that of those who survive the acute occlusion not all die a cardiac death. In the series reported by Parkinson and Bedford, of thirty-eight patients who did not die immediately twenty-four lived to die of other causes.

In closing, it seems worth while to point out that diagnosis may have a decided bearing on prognosis. It is important that acute coronary occlusion be differentiated from angina pectoris, in order that adequate treatment may be instituted. This is especially true in patients who are subject to anginal attacks. In passing I might say that the essential feature of adequate treatment is several weeks of absolute bed-rest. Acute coronary occlusion, with the site of pain referred to the epigastrium, must be differentiated from acute surgical emergencies of the abdomen, in order that these patients may not be subjected to a laparotomy, a procedure which is usually fatal under the circumstances.

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ACUTE PANCREATITIS *

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Pancreatitis is a disease of moderate frequency. Many cases, however, undoubtedly do not continue to the state of hemorrhage, gangrene or suppuration. In these mild cases there are symptoms of digestive derangement often without any distinctive symptoms to call attention to the pancreas. When, however, the inflammation is such as to interfere with function so that trypsin is formed within the gland, we have the infrequent and very dangerous condition of acute hemorrhagic pancreatitis.

In order to understand this affection, knowledge of the physiology of the pancreas is essential. The pancreatic juice is alkaline and is discharged into the duodenum, where it neutralizes the acid secretions from the stomach. According to Starling, the action on milk is either by a free rennet-like ferment, or by trypsin or both. The milk is coagulated and quickly dissolved. The carbohydrates are acted upon by amylopsin and the fats by steapsin, while the proteins are acted upon by trypsin.

The pancreas of an animal can be digested by the pancreatic juice. It seems strange, then, that the pancreas does not digest itself. As a matter of fact, this is to a certain extent the thing that does

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*Read before the King County Medical Society, Seattle, Wash., May 21, 1928.

take place in inflammatory conditions. Trypsinogen is secreted by the pancreas and is acted upon in the duodenum by an enterokinase and changed into trypsin, which in turn digests the protein material. This activation of the pancreatic juice may be caused, according to Osler and McCrae, by calcium salts, the action of bacteria or the products of aseptic necrosis.

In a severe case of acute pancreatitis it is probable that the activation is caused by infection, and then the pancreatic juice immediately, through the trypsin formed, begins to digest itself and this digestion includes the blood vessels. Hemorrhage takes place and, being confined within the pancreatic capsule, great pain results. The circulation is interfered with and necrosis follows, and sooner or later, if the patient survives, suppuration.

When we consider the delicacy of this mechanism, the only wonder is that we do not more frequently have serious disturbances in the pancreas.

In this paper it is not intended to go into a complete consideration of acute pancreatitis, but what seems more profitable on this occasion, the discussion will revolve about three recent cases which have come under my observation. In giving the histories of these patients, only those points will be mentioned which have relation to the present discussion.

Case 1. A woman, 66 years old, complained of pain in both knees and in the thumbs. Nineteen years previously there had been an injury to the right knee.

On June 18 I operated for a giant cell sarcoma in the upper end of the right tibia. She went to the hospital with a temperature of 99.2°, and a pulse of 80; leukocytes 14,000, polys. 66 per cent. There was nothing unusual in her convalescence except that she complained more or less of indigestion. She left the hospital apparently in good condition on July 3. During the following week the husband telephoned on two or three occasions, telling about more or less disturbance of digestion.

In the afternoon of July 9, six days after she left the hospital, the husband telephoned she was having very severe pain. Dr. Gross made a diagnosis of gallstone colic and gave ¼ gr. morphine. Early in the evening I sent her to the Seattle General Hospital. My diagnosis also was biliary colic. She was complaining upon entrance into the hospital of pain in the right upper quadrant of the abdomen. She said that for the last twenty years she had had infrequent, less severe and shorter attacks of a similar character. Four or five days before admission she had sudden pain in the gallbladder area with nausea and vomiting. The nausea and pain continued, there being occasional exacerbations of the pain which radiated to the back. Temperature was 99°, pulse 96, respiration 20 but labored. She was very tender and rigid, particularly in the right upper quadrant of the abdomen. Temperature and pulse were the same the next morning; at 4 p.m. temperature was 100° and pulse 92. July 11 at 9 o'clock a.m., temperature 100.4°, pulse 100, respiration 24, the patient having much pain. Leukocytes 19,200, polys. 87 per cent.

At operation this morning the abdomen was found filled with a great quantity of purulent fluid of such appearance that it made me think it was a perforating duodenal ulcer. There was considerable plastic lymph in the region of the duodenum. No perforation was found, and as the pulse went up rapidly and she seemed in a condition of shock, abundant drainage was placed and the wound closed. One cigarette drain was placed above the stomach into the lesser peritoneal cavity. In all, five cigarette drains and two rubber gloves were used. The pulse was counted as high as 168 during the operation, that evening at 6 being 136. At 8 the temperature was 102° and pulse 120; at midnight temperature 102.6°, pulse 128 and respiration 28; at 2:40 a.m. temperature 102.4°, pulse 138, respiration 38. She died at 5:15 a.m.

On postmortem the pancreas was found necrotic and filled with pus. There were numerous spots of fat necrosis over the omentum. On lifting the transverse colon a ring of inflamed bowel was found. While there was a general peritonitis, it did not seem to be as severe as one would expect from the quantity of purulent fluid present.

Case 2. A French sailor 24 years old. Admitted to hospital with acute cholecystitis. Note of examination on admission showed there was no previous characteristic history. He had had pain and tenderness with some nausea and vomiting for the past three or four days. The pain radiated to the back and shoulder.

Examination showed a sick appearing man, marked spasm, tenderness and muscle rigidity in the upper right quadrant under the costal margin in the gallbladder area. Acute tenderness and rigidity too marked to differentiate any definite mass. White count 12,200 and polymorphonuclears 78 per cent. Cholecystectomy was performed on June 30. Wound closed without drainage.

On July 3 there was a serous discharge which continued more or less until July 25, apparently coming from a small fistulous opening. About 11 p.m. July 25 the patient was seized with sudden, severe pain and we felt that he probably had a ruptured viscus, or that the cystic duct had opened, allowing bile to escape. At the same time he vomited. It was necessary to give him ¼ gr. morphine for moderate relief.

July 24 at 4 p.m. temperature 97.8°, pulse 80, respiration 20; July 25, 6 a.m. temperature 98.6°, pulse 82, respiration 20; July 25, 4 p.m. temperature 98°, pulse 88, respiration 20. During the operation respiration varied from 24 to 34 and the pulse was 160. After operation the pulse was 140, respiration 40.

July 26, at 3 a.m. pulse 132, respiration 26; July 26 at 8 a.m. temperature 98.4°, pulse 104, respiration 24; July 26 at 4 p.m. temperature 99.2°, pulse 100, respiration 24; July 27 at 4 p.m. temperature 99°, pulse 96, respiration 20; July 28 at 4 p.m. temperature 97.8°, pulse 72, respiration 20.

He was taken to the surgery at 1 a.m. On opening the abdomen a large amount of murky fluid escaped and there were numerous spots of fat necrosis over the omentum. On lifting the transverse colon there was a ring of acutely inflamed peritoneum on the lower side of the colon. The pancreas was large and hard, with hemorrhagic appearance over it. An opening was made in the mesocolon and a cigarette drain was placed in the lesser peritoneal cavity. Two rubber gloves, one filled with gauze, were placed in the general peritoneal cavity. He gradually improved, but had continuous drainage for three months.

On July 30 the wound opened so that some omentum and two or three inches of the transverse colon protruded. It was necessary to give a general anesthetic, replace the viscera and restitch the wound. I then put in chromic gut with mattress sutures with very careful placing of several silkworm gut figure-of-eight sutures. The catgut was absorbed within a few days, and it was necessary to hold the wound together with adhesive plaster. In January I operated again on account of a large ventral hernia. The liver was found adherent to the abdominal wall. This was freed and the hernia repaired.

This man had occasional attacks of pain in the abdomen, with nausea and vomiting, continuously after his second operation until he left the hospital March 2, 1928. These attacks lasted anywhere from two hours to five or six days, but usually two or three days, and came on more particularly when he had overeaten. They were probably due to overactivity of the pancreas which had been diseased and scarred from the acute pancreatitis.

Case 3. A woman, fifty years of age, gave a history four months previously, (October, 1927) of what was supposed to have been a short attack of gallstone colic. She had rather severe pain and vomited, but there was no soreness following the attack. The symptoms all disappeared within an hour.

During the afternoon of February 21, 1928, she had sudden, excruciating pain in the abdomen; it was so severe that she could hardly move even in bed. Two ¼ grain doses of morphine were necessary before she could be moved in the ambulance to the Seattle General Hospital. She was in such severe pain on entrance to the hospital, that it was impossible to make a satisfactory examination, although there was a great deal of abdominal tenderness and rigidity. She also vomited that day and the days following.

On admission to the hospital her temperature was 97°, pulse 72, respiration 20. At 10 p.m. temperature 98.2°, pulse 66, respiration 20. On the 22nd, the day after admission, the following note was made: "Patient breathes with a grunt. Abdomen appears much distended and tympanitic. No dullness of flanks. Percussion note not transmitted. On palpation tenderness over entire abdomen, apparently more marked in the gallbladder region. Practically impossible for patient to relax abdominal muscles. Rectal examination negative. Complains of pain over abdomen. Diagnosis, cholecystitis."

Highest temperature Feb. 23 100.6°, pulse 96, respiration 22; highest temperature Feb. 24 99.4°, pulse 90, respiration 20; highest temperature Feb. 25 101°, pulse 86, respiration 20; highest temperature Feb. 26 100.4°, pulse 88, respiration 20; highest temperature Feb. 27 100.8°, pulse 96, respiration 20; highest temperature Feb. 28 101°, pulse 96, respiration 20; highest temperature Feb. 29 101.4°, pulse 86, respiration 20; highest temperature Mar. 1 98.4°, pulse 88, respiration 20.

	Leukocytes	Polys.
2/20/28	26,200	78 per cent
2/25/28	27,800	81 per cent
2/27/28	23,800	80 per cent
3/..1/28 Op. day	25,800	76 per cent
3/19/28	23,200	71 per cent

March 1 an operation was performed. Stones were found in the gallbladder and many spots of fat necrosis were present in the omentum. The pancreas was enlarged and hard. There was no free fluid in the abdominal cavity. The gallbladder was long and opened for drainage. Drainage was also placed outside the gallbladder down to the foramen of Winslow.

March 1, after operation, pulse 120, respiration 24; 7:30 p.m. temperature 98.4°, pulse 92, respiration 26.

The patient made an uneventful recovery, but when the drainage stopped on April 20, she came to my office on account of severe pain. Complete relief was given by reopening the wound which was almost ready to open itself, and there was considerable drainage. She tells me now that the wound has been completely closed for two weeks and she feels perfectly well.

In each of these cases a long incision was made into the upper abdomen at the right side of the median line. In the first two the abdomen was full of purulent fluid and drainage was placed in direct connection with the pancreas but without opening the capsule. In the third case there was no free fluid in the abdomen and drainage by the gallbladder seemed sufficient.

In nearly every case of acute pancreatitis the gallbladder should be drained, and in the milder cases this is sufficient. In the first two cases, which were draining so freely into the abdomen, a large amount of drain was used. The access to the pancreas can be gained either above or below the stomach, or through the transverse mesocolon. In one of my patients the drainage was placed above the stomach, and another through the transverse mesocolon. The third did not require drainage but was well drained through the gallbladder with a small drain outside.

Sir Berkeley Moynihan, in "Annals of Surgery," June 1925, has given a classical article on acute pancreatitis. In this he lays great stress on the suddenness and severity of the pain, with accompanying rapid pulse and shock. In two of my patients this has not been true as far as the pulse is concerned, namely, case 1 where it was 96, and case 3 where it was 72. In case 2 the records show that the pulse was 88 at 4 o'clock, while the sudden severe pain occurred six hours later. The pulse was as high as 160 during the operation, and 140 soon after.

The tenderness and rigidity of all these patients was marked, but it was not the board-like rigidity of perforating duodenal ulcer. There was vomiting in each instance, and in all of them there was disease of the gallbladder, two having stones and the other a definite acute cholecystitis.

It is interesting to note the acute sudden onset in all the patients as far as the severe pain is concerned. There was, however, more or less discomfort previously in the first two. It is difficult to say whether the indigestion in case 1, while she was in the hospital, becoming more aggravated after leaving, was due to the infected gallbladder which contained stones or to the pancreatitis. She probably had hemorrhagic pancreatitis four or five days before admission, at the time of the first acute severe pain.

In case 3 it is uncertain what the former attack was which was over within one hour, with no further disturbance. This may have been due to the gallstones, or on the other hand, there may have been a slight pancreatic inflammation, probably however, the former.

There is such a frequent association of pancreatitis and cholecystitis that there must be a close relation between these diseases. This is not strange, when we realize the fact that the ducts join and open by a common passage into the duodenum. It is not difficult for the infectious process to follow along mucous membrane from one to the other.

It is undoubtedly true that there are many cases of mild pancreatitis, associated with inflammatory conditions of the bile duct, which pass unnoticed and are entirely cured by nature's own efforts, without even a diagnosis being made. When, however, this inflammation reaches a stage that the pancreatic juice is disturbed in function and activated while in the gland, so that it digests its own tissues, we have a hemorrhage which may be sudden and severe, giving the acute pain and shock described by Moynihan, or we may have more gradual disturbance and bleeding, giving much less severe pain and very much less tendency toward shock.

There are other conditions with which acute pancreatitis may be confused in diagnosis, and while some surgeons of large experience claim that the diagnosis is easy, such is not always the case in practice. The tenderness is greater in the upper part of the abdomen, but so it is in gallbladder disease. However, with the pancreas involved, there is more likely to be tenderness toward the left side of the upper abdomen. In case of perforating duodenal ulcer, it may be very difficult to diagnose between them, both being sudden in onset, but there is more likely to be a board-like resistance in the case of perforating ulcer. Appendicitis is less sudden in onset and the tenderness occupies a different portion of the abdomen. Ruptured uterine pregnancy is sudden in its onset, but the patient is more likely to show the effects of hemorrhage in the case of extrauterine pregnancy, and signs and symptoms refer to the lower abdomen. The pain of intestinal obstruction usually comes more gradually, although in cases of complete strangulation there may be some difficulty in differential diagnosis, except in the later stages where the vomiting is of a definite character.

While the severity and suddenness of pain have both been emphasized as characteristic of acute pancreatitis, it must be remembered that gallstone colic, renal colic and a large perforation in a duodenal ulcer come pretty close at times to the maximum of both suddenness and severity of pain. Renal colic, however, is characteristic in the direction of the pain and the urinary symptoms.

Treatment in acute hemorrhagic pancreatitis should be prompt. Immediate operation with abundant drainage are the essentials and the different methods of accomplishing this may vary with the individual case.

It is interesting to observe the treatment and results of these three patients. In the first case we made a diagnosis of gallstone colic and it was considered wise when the patient came in late Saturday night to let her rest, expecting to operate later when she had become more or less immune to this acute infection. The temperature of 99° and pulse of 96 would also rather indicate the wisdom of this course. When the patient did not improve by Monday morning, which was about thirty-six hours after entrance to the hospital, an operation was performed and an immense quantity of purulent fluid was found in the abdomen. Generous drainage was used but the patient died about nineteen hours after operation. There was tremendous shock during the operation without any material loss of blood. The postmortem in this case showed hemorrhage of the pancreas with considerable necrosis and suppuration. It is possible that this patient could have been saved, if the operation had been performed sufficiently early. It is likely that the hemorrhagic pancreatitis began four or five days previously, when she complained of the first severe pain.

The second patient, in all probability, had at least a mild grade of pancreatitis when the operation of cholecystectomy was performed, but it was only a mild inflammation until the evening of July 25, when the pancreatic juice had become activated by infection and the pancreas digested enough of itself to cause hemorrhage and acute pain. In this instance, happening only two or three weeks after my previous experience, operation was prompt and, while there was a large quantity of murky fluid already in the abdomen, the pancreas swollen and hard, abundant drainage gave the necessary relief and the patient recovered.

In the third instance there was a long gallbladder which seemed to have been prepared for drainage. I immediately made use of this, removed the stones, drained the gallbladder, and the patient recovered. There was considerable pain with nausea and vomiting during the first four or five postoperative days.

Undoubtedly pancreatic infection can take place without gallbladder infection, but certainly the association is very frequent, and it is also my belief that many patients pass through a mild pancreatitis and recover without the condition being known.

It might be said that we have, in these three cases just reported upon, an acute abdomen, the expression commonly used to avoid an accurate diagnosis. Therefore we should operate, but not by any means on every patient who shows acute abdominal symptoms. A gallbladder can be more safely cared for after than during an acute attack. While it can be done with comparative safety at any time, there is a margin of safety in favor of later operation.

In pelvic peritonitis, due to gonorrheal infection, the patient is much better off without operation during the time that the acute symptoms are present. We do not want to perform an abdominal operation for any ordinary kidney condition, nor would we want to operate in the case of an aneurysm of the abdominal aorta, a case of which came under my notice during the past year. Abdominal operations should not be performed for relief of caries of the vertebra, locomotor ataxia and pneumonia. All of these can give severe symptoms, simulating what is spoken of as acute abdomen. It is, better, therefore, when we see a case of this sort, at least to make every effort toward an accurate diagnosis of the condition present, thus avoiding operation on some patients where harm might be done.

It was interesting to note the absorption of the sutures in the second case of pancreatitis. It was a new experience for me, and it was difficult for me to believe. After the second operation there would have been a protrusion of the intestines again, except for the most careful attention to the wound and strapping with adhesive plaster, for the stitches were of no value after the first few days.

The degree of inflammation of the peritoneum in comparison to the amount of fluid in the first two cases was not great. There was some general peritonitis but not marked, as it would have been from the extrusion of the intestinal contents.

Just how much damage is done to the peritoneum and to the system generally from this abnormal action of the pancreas is uncertain. Moynihan, in his splendid article, states that in operating the capsule of the pancreas should be opened, and that no incision should be made into the gland itself. He does state, however, that sometimes a finger can be inserted into the gland. Other authorities state that this incision in the capsule is not necessary.

It seemed to me that this would have only complicated the case in the last two, both of which recovered. In the first one it is a question whether the patient would have done better had the pancreatic capsule been opened. I doubt this, because she seemed to be in extreme shock and it is probable the course would have been just the same. As stated before, however, an earlier operation certainly would have given a better opportunity for recovery.

Authorities mention the fact that sometimes there are slate-blue patches over the body, particularly the abdomen, the face being more or less livid. This condition was not observed with my patients. Neither did I use the test of Lowe, mentioned in Moynihan's article quoted above. In this, two or three drops of a 1-1000 solution of adrenalin are placed in the conjunctiva of one eye, the dose being repeated in a few minutes. In fifteen to thirty minutes the pupil of that eye will dilate in pancreatic disease, while it remains unchanged in its absence.

SUMMARY

Acute pancreatitis is rather a common disease, but comparatively few reach the severe hemorrhagic stage with necrosis and suppuration.

There is a close association between the inflammatory conditions of the bile ducts and those of the pancreas.

Immediate early operation is important to secure success.

A large upper abdominal incision should be employed.

Drainage should be ample and, while in the milder cases drainage of the gallbladder is sufficient, in the more severe there should be also direct drainage to the pancreas, with or without opening the capsule.

In all cases, where there is suspicion of disturbance of the function of the pancreas, the wound should be carefully watched on account of the effect of the pancreatic secretions.

TUBERCULOUS ENTEROCOLITIS. Frank Smithes, Morris Weissman and Frank Fremmel, Chicago (*Journal A. M. A.*, Dec. 22, 1928), conducted a gastroenterologic survey for definite evidence of the incidence of digestive dysfunction among the patients in a tuberculosis sanatorium. The summary of symptomatic anomalies was: dysphagia (laryngeal or tracheal disease?), 15 per cent; gastric symptoms (nausea, vomiting, pyrosis), 40 per cent; peptic ulcer syndrome, 3.5 per cent; disturbances in bowel, 79 per cent; normal stool frequency, but dyspepsia present, 19 per cent. In this group there were forty-four males and thirty-six females. The average age approximated 32 years; the youngest patien twas 6, and the oldest 70 years. The average duration of the tuberculosis (usually, initially, pulmonary) was 2.6 years, the shortest duration being two months and the longest fourteen years. At the time of study, the sputum in forty-nine csaes contained tubercle bacilli; in seventeen complement fixation tests were positive; in twelve the sputum was bacilli-free, but in ten of these tubercle bacilli had been present in the sputum or positive complement fixation tests had been obtained.

CARCINOMA OF THE ESOPHAGUS*

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The death rate from cancer increased from sixty-three per hundred thousand in 1900 to ninety-one and nine-tenths per hundred thousand in 1924, making an increase of nearly forty-six per cent in twenty-four years. This is probably partly due to better diagnosis and partly to a higher percentage of postmortem examinations. Yet this does not account for all. There has been an absolute increase in the number of deaths from cancer.

Whenever there is a persistent endeavor on the part of the profession to discover a method of controlling a disease, results are always obtained. Sometimes the result comes quickly, and in other instances it comes after long and laborious study has been made. The exact cause of a malady need not necessarily be known in order to control it. Smallpox is an absolutely preventable disease and has been since the days of Jenner, although its cause is not known even at the present day.

Because we do not know the exact cause of cancer is no reason why physicians should sit idly by, while the research men are searching for it. We know that chronic irritation of epithelial structures leads to cancer. We know that radical removal of a primary growth before metastasis has occurred results in a cure. In the light of our present knowledge the prevention and control of cancer consists, first, in a removal of all irritating processes which may lead to its developument and, second, the early removal of malignant growth. To accomplish this requires education of both the profession and the layman, as to the importance of early examination and early radical irradication of the malignant process.

A report of the Pennsylvania cancer commission shows the need and value of such education. In 1910 the average time elapsing between the first symptom and the operation in superficial cancer was eighteen months. In 1923 this had been reduced to fourteen and six-tenths months. In 1910 the average time elapsing in superficial cancer, between the first consulting of a physician and the operation, was thirteen months. In 1923 this had been reduced to four and a half months. For deep cancer the average time between the first symptom and the operation in 1910 was fourteen months. In 1923 this had been reduced to eight months. The average time between first consulting a physician and the operation in 1910 was twelve months, and in 1923 was three and nine-tenths months. This improvement has come as a result of education, but it still shows a need of further education, for the average time between the consultation of a physician and the proper treatment of a superficial cancer was still four and one-half months in 1923, and for deep cancer was three and nine-tenths months. This gives entirely too much time for metastasis to occur.

I have chosen to discuss carcinoma of the esophagus as it is generally looked upon as one of the hopeless carcinomas, and the patients are often advised, when the diagnosis is made, that there is nothing to do but wait for the termination. While it is true that in a considerable proportion cure is impossible, yet there is much to be done to relieve the patient of suffering and to prolong life, and make it more endurable. There are some that can be cured. I believe also that there is much that can be done in the prevention of cancer of the esophagus.

Statistics from various authorities show that carcinoma of the esophagus occurs in from four and a half to twelve per cent of all carcinomas. Eighty-two per cent occurs in men, while eighteen occurs in women. This great preponderance in men means that there is something that exists in them and not in women that serves as an important etiologic factor.

In going over clinical records it is found that the esophagus of men is subject to two irritating substances more frequently than that of women, viz., alcohol and tobacco. Regardless of what one would like to believe, facts must be taken. The use of these two irritants is the only striking difference and possible etiologic factor existing between men and women. Therefore, in the light of our present knowledge, I cannot see how any other conclusion can be made than that these two irritants are responsible for a considerable proportion of the additional sixty-four per cent of cancer found in the esophagus of men. So long as men will disregard that which they know to be for the best interest of health and continue to use two irritant substances because of a transitory, pleasurable sensation produced by the effect of these powerful drugs, cancer of the esophagus is going to be far more prevalent in them than in women, unless modern women assume to an equal degree these detrimental habits of men.

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Of the carcinomas of the esophagus, twelve and three-tenths per cent is found in the upper third, sixty and eight-tenths at the bifurcation of the trachea and twenty and nine-tenths per cent in the lower third, eighteen per cent of which are at the cardia. The cancer is usually of the squamous cell type, but adenocarcinoma also occurs, in which case it resembles that of the stomach in appearance. It usually presents a flat infiltrating ulcer, but not infrequently there is a bulky, projecting mass. This latter type is usually of the adenocarcinomatous variety. The diffuse infiltrating type occurs occasionally. In some there is marked proliferation of the interstitial connective tissue, giving a typical appearance of scirrhous carcinoma.

The earliest symptom is that of dysphagia, beginning with solid foods and finally liquids. With the development of the obstruction, there is a dilatation of the esophagus above and a regurgitation of the food following eating. Early the obstruction is sufficient to prevent passage of only coarser foods. The patient feels a sense of pressure pains as the larger portions of the food are swallowed. With the extension of the process the pain becomes more constant. The regurgitated food may contain mucus, some blood if there has been bleeding, and with ulceration of the growth a foul odor, due to necrosis of the tumor.

A diagnosis is made from the history of the symptoms as outlined. An x-ray study shows encroachment upon the lumen of the esophagus of an irregular type. Esophagoscopy reveals a growth from which a piece of tissue may be removed. Sounds may be passed for diagnostic purposes and later for treatment. Personally I believe this process is not surgically sound. While it is true there is no harm for a time, it is also true that the continual passing of sounds eventually results in a rupture of the esophagus.

Treatment that has been used consists of dilatation, radiation, esophogostomy, gastrostomy and resection. Dilatation is mentioned for the purpose of its condemnation. It is a blind method and a dangerous one, although the danger is minimized by giving a thread which is allowed to pass out into the intestinal tract and used for a guide.

The use of radium is not giving the result that was hoped for when it was first introduced. Esophagostomy has proved of value only as a part of the radical operation. Gastrostomy is a procedure that has given the greatest relief, although it never gives a cure. By feeding through the gastrostomy wound and giving the esophagus a complete rest the secondary inflammatory infiltration is absorbed so that the stricture often opens, enabling the patient to eat food normally.

Following gastrostomy these patients often gain in weight, and can go about their work for some months. I had one patient who, though much emaciated at the time of the operation, regained his normal weight, and was again able to eat normally without any apparent difficulty, and carry on his work on a small farm as well as formerly. He considered suing me for malpractice because his apparent recovery was so complete that he thought it impossible for him to have had a cancer. He lived over eighteen months following the gastrostomy.

Resection offers the only opportunity for a cure. When the carcinoma occurs in the upper portion, its removal is not so difficult, and although mortality runs close to twenty per cent, it is justifiable because it offers the only chance of cure and adds to the life and comfort of the majority that are operated upon. Even in the extensive carcinomato involving the larynx and surrounding structures the patients will often live with a fair degree of comfort for a year to a year and a half after the operation. One of our patients, in whom an emergency operation was necessary to prevent strangulation, had more than an additional year of life, went out on a small farm, where she assumed charge of the chickens and learned to speak so that she could go shopping. She felt happy and contented for approximately a year.

The operation for radical removal of carcinoma of the esophagus within the chest may be divided into four different types: (1) radical removal with an esophagostomy above and a gastrostomy below, connected by a rubber tube, (2) the radical removal with a formation of a subcutaneous epithelial-lined tube as an artificial esophagus, (3) radical removal with reconstruction of the esophagus from a transplant skin flap, (4) reconstruction of the esophagus by use of a portion of the intestine or the stomach, (5) transplantation of the stomach or a portion of it upward, (6) transplantation of the diaphragm upward, so that the lower end of the esophagus becomes an abdominal organ.

The most striking illustration of esophagostomy and gastrostomy connected by a tube was in Torek's case, in which the patient lived for about thirteen years, and died from pneumonia. Lilienthall successfully reconstructed the esophagus after removal of a portion by transplanting a skin tube. The patient lived about eight months and died of recurrence.

Leeding suggested the abdominal method, bringing the esophagus down, closing the cardia, and then anastomosing the esophagus to the fundus. Mickulicz improved this by first obtaining better exposure through the turning up of the costal arch on the left side and, second, transplanting of the diaphragm upward. Heuer has recently elaborated a method of securing greater transplantation of the diaphragm. Volker, Kuffell and Burcher have each had successful cases operated on by this method. Zaaiger and Hedbloom have had operative successes by the combined abdominal and thoracic method.

In the department of surgery at the University of Oregon we have been working on an operation for carcinoma both at the lower end of the esophagus and the middle third. Our work has been upon dogs and up to the present time our chief difficulty has been with anesthesia, as the dog's mediastimum is so thin that collapse of the right lung occurs if positive pressure is not employed. We have been using the transpleural method of approach, making an incision in the eighth intercostal and resection of the fifth, sixth and seventh ribs posteriorly so that they can be retracted upward. The opening in the diaphragm is stretched and the stomach transplanted upward.

After walling off the mediastinum with gauze the esophagus is picked up, freed, and the phrenic nerves separated from the esophagus. The esophagus then is clamped at the cardia and at a point about 7 cm. higher and the intervening portion removed. A silk suture is inserted into the anterior wall of the stomach about 2 cm. below the orifice of the cardia, and brought through the orifice, catching the esophagus about 1 cm. above the cut end. The needle does not go through the mucosa because of danger of infection. It is then carried down through the cardia and run out through the stomach at a point about 1 cm. from where it entered. Similar sutures are inserted in the posterior wall and in the lesser and greater curvatures. These are drawn taut, bringing the esophagus down through the cardiac opening of the stomach and tied.

A continuous suture is then inserted, uniting the serous surface of the cardia to the esophagus, thus producing a complete closure. The stomach is then pleated so as to make it tubular in order that the portion above the diaphragm will not dilate and pull the entire stomach into the thorax. Next the opening of the diaphragm is sutured to the stomach. This is very important, as in a successful operation upon one dog we had perfect healing of the anastomosis but the dog later died from intestinal obstruction, due to a loop of jejunum passing up by the stomach into the thorax.

The operation of carcinoma in the middle third is done in three stages. At the first operation an incision is made in the stomach after putting on clamps parallel to the greater curvature, beginning on the lesser curvature at a point one and a half cm. from the cardia, and extending down for nearly half the length of the stomach. The margins are then sutured, thus making a tube continuous with the esophagus, extending down to about the middle of the greater curvature and a more or less triangular pouch which is brought through the abdominal wall for a gastrostomy.

At the second stage the chest is opened. The incision is made in the eighth interspace and the fifth, sixth and seventh ribs resected posteriorly. The esophagus is freed and the gastric tube brought into the thorax until the stomach rests against the diaphragm. The diaphragm is then sutured at the base of the tube. Gauze is packed about the esophagus in order to produce a walling off sufficient to prevent infection of the mediastinum, and the tract closed without drainage. After five days the chest is again opened and a portion of the esophagus is resected.

Our work for carcinoma of the esophagus is in a purely experimental state. We are not ready at this time to do any work for patients at all, but I believe as a result of experimental work being carried on here and elsewhere, a fairly safe approach for the treatment of a malady, that until the present time is otherwise always fatal, will be developed.

THE NEXT STEP IN CANCER EDUCATION *

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Some years ago a concerted effort was started to bring to the public some of the salient facts about cancer and to stimulate their applying for physical examinations early in the hope of reducing cancer mortality. For a time this compaign apparently brought results and in certain types, breast, for example, the effect is still being noted. One of the results of this publicity, however, showed that edu-

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cation in cancer work, to be really effective, should be carried to physicians as well. Tonight I want briefly to enlarge on this theory.

The average physician in general work sees only a few cases of cancer each year, in various locations of the body. Unless he had especially good training in tumor work during his medical student days, has kept up his reading or refreshed his memory by postgraduate work, he is very likely to delay diagnosis, or miss it altogether in the early or border-line cases, and this may be enough to change the case to the inoperable or untreatable type.

The general practitioner should make more often and more careful physical examinations, for numerous patients have reported being treated symptomatically for weeks and months without any physical check-over. Let me illustrate. A man of fifty had complained of slight hoarseness and increased mucus. Nothing was noted on examination with tongue depressor. No further examination was made for twelve weeks, when a laryngoscopic mirror revealed a mass involving the left vocal cord. Induration about larynx and an enlarged cervical lymph node decided against laryngectomy. A tracheotomy was soon necessary and death came within a year from onset of symptoms. Three cases of cancer of the rectum had complained of hemorrhoids with occasional bleeding for six and eight and twelve months respectively, had received several prescriptions from their physicians but no digital examination until its only value was to reveal the extent of the disease and the hopelessness of surgical removal.

Growths about the mouth and lip bring up the question of lues. More than one chancre of the lip has been excised with the diagnosis of cancer. Many of these growths are associated with leukoplakia and often start from these patches. Smoking, a form of steady irritation, is the usual underlying cause but many syphilographers claim that leukoplakia only develops in conjunction with a syphilitic infection. So don't hesitate to order a Wassermann test in all suspicious lesions in the mouth or on the lip.

A pelvic examination of every confined woman should be made from four to six weeks afterward to note the condition of the cervix. Tears unnoted at delivery or unrepaired then should be mentioned to the patient and sutured. This precaution alone would materially reduce cancer morbidity in women, for cervix ranks next to breast in feminine malignancies. It used to be said that carcinoma of the cervix had never been found in women who had had neither child, miscarriage nor instrumentation. Only a few cases disproving this dictum are on record. Another phase of cervix carcinoma is long-continued local applications to erosions and suspicious ulcerations of the cervix, associated with history of increasing discharge and occasional spotting. Personal experience with four such cases has shown how delay of this kind changed the growths to the type where palliation was all that could be expected from any treatment.

Education is needed also in the field of operating. Many men doing surgery have not had enough training to recognize malignancy in freshly-opened incisions. Breast surgery in a woman thirty-five or over with a single tumor in one breast should not be done without the benefit of a frozen section diagnosis and without the permission of the patient to do a radical amputation, if this seems the safest procedure.

We may differ as to relative value of surgery or radium in the early cases of cancer of the cervix, where the disease is limited to the cervix alone. But if operation is decided on, a simple hysterectomy is of about as much value as no treatment at all. A complete Wertheim operation should be performed, which means removal of a wide cuff of vagina, stripping of all tissue along the ureters for two or three inches, and thorough cleaning out of the lower pelvis of all fat and muscle. This is truly a radical piece of work and because of poor condition of the patients, prolonged anesthesia, etc., even the most skilful operators in the best clinics have a primary operating mortality of from seven to ten per cent. If this primary death rate occurs under the most favorable conditions, what will the operator's percentage be who may do one or two such operations a year? Is this fair to our patients?

Lastly, a few of our profession need to bear constantly in mind the text that was ever before them in medical school days, that the benefit and welfare of the patient was the first and main consideration of our work and that financial recompense for ourselves came later. If this were more closely followed, cancer mortality would be lowered.

Let us, therefore, endeavor constantly to improve our diagnosis in cancer by being more thorough and careful in our physical examinations; by indulging earlier and more frequently in consultations; and by realizing more honestly our abilities and limitations in diagnosis and treatment. Along this line we must progress if we wish to help in reducing cancer mortality.

HEADACHE AND EYESTRAIN*

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In any practice of ophthalmology probably the most frequently expressed complaint, next to defects in vision, is headache. In the more recent years, since the services of the ophthalmologist have been called upon to a greater extent, the problem of headache from eyestrain becomes an ever increasing one. I refer exclusively in this paper to the headache caused by what is known as eyestrain, which in itself may mean many things but is looked upon generally as the fatigue, caused by poor vision or some defect in the neuromuscular mechanism of the eyes. Headaches from other causes, such as intracranial pressure, inflammatory conditions of the eyes, inflammations of the optic nerve, glaucoma and other conditions in which there is definite pathology present, will not be dealt with. It naturally follows that any ophthalmologist has a large experience on which to base a knowledge of headache from the clinical point of view. However, it does not mean that we know much about it. Headache, for obvious reasons, has not been studied by analytic laboratory methods, so that we must content ourselves with superficial conclusions.

It was S. Wier Mitchell, as quoted by Langdon, who made the first conclusive statements regarding eyestrain as a cause of headache. This was published in 1876 in the *American Journal of Medical Sciences* and was convincing enough to arouse general medical interest. Mitchell's statements were these: That there are many headaches which are due to disorders of the refraction or accomodation apparatus of the eye; that in those instances the brain symptoms are often the most prominent and sometimes the sole prominent symptoms of the eye trouble and that, while there may be no pain or sense of fatigue, the strain with which it is used may be interpreted solely by frontal or occipital headache; that the long continuance of eye troubles may be the unsuspected source of insomnia, vertigo, nausea and general failing health; that in many cases the eye troubles become suddenly mischievous, owing to the failure of the general health or to increased sensitiveness of the brain from moral or mental causes. These brief paragraphs contain the gist of our knowledge of eyestrain today. Since that time whole libraries have been written on the subject but little if any new thought added.

Headache, as you all know, is pain felt in the dural branches of the trigeminus, the dural branches of the upper cervicles and the recurrent dural branches of the vagus. The trigeminus is by far the most important. If you will pardon a brief anatomic description, I will recall to your minds that the centers of the third, fourth, fifth, sixth and seventh cranial nerves form a closely related group, all interconnected, and that the fifth is the sensory nerve for the area supplied by the others as motor nerves. It is, therefor, in the reflex arc of these four nerves, three of which are motor nerves for the ocular muscles. There is also communicating branches from its ophthamlic division to the ocular motor muscles.

By far the most important cause of habitual headache is eyestrain and by this, as I have said before, is meant the strain or fatigue of the adjusting mechanism of the eye. It is not a strain of the retina or the sensory apparatus, strain of which does not cause pain. It produces only diminished or altered vision. This, however, may in turn cause added effort to be made by the adjusting mechanisms, thereby producing eyestrain, but the strain originally is not of the sensory mechanism.

There are two adjusting mechanisms of the eye. First is the focusing mechanism which produces the sharp, clear-cut image of the object looked at, and the second is the fixation mechanism which enables the two eyes to look simultaneously at an object and to maintain the visual axes in such a position that the image of the object falls exactly on the macula of each eye. If the focus of the light falling from an object is not an exact focus, then an effort must be made to remedy the condition and there takes place reflexly an adjustment of the lens by a complicated nervous mechanism controlling the ciliary muscle, either a contraction or relaxation of that muscle to enable the light to be focused exactly. This is known as accomodation and is a factor which is working continuously during all the waking hours. If the two eyes are not able simultaneously to fix upon an object, then there is loss of binocular single vision. Diplopia results with all its distressing symptoms. This mechanism of fixation and binocular single vision includes the muscles moving the eyes and especially the motor nerve cells below the third and fourth ventricles with their elaborate system of intercommunication and coordination, not only with each other but with visual, auditory and other centers often concerned in ocular movements.

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*From the Department of Ophthalmology University of Oregon Medical School.

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It is by means of these two mechanisms that one is able, on the one hand, to overcome many of the commonest errors of refraction and secure in spite of these errors good vision and, on the other hand, to correct minor defects of the ocular muscle balance and secure binocular single vision. The demands made upon these mechanisms in the normal individual are not great, certainly nowhere near the maximum strength of the individual muscles, for, as is true throughout the human body, all structures are built to withstand more than the ordinary load. Lancaster has pointed this out to show that eyestrain is not universal. However, as he says, and it is true, especially in our own city, there are certain enthusiasts (I refer to the refracting opticians or so-called optometrists), nonmedical men, who would have the public believe that everyone is in need of glasses to prevent terrible things happening to their vision; and, on the other hand, are the pure fakirs, who take off the glasses of everyone whom they can entice into their so-called institutes, and treat everything with optic atrophy to cross eyes with various colored lights and eye exercises.

When the work to be done is well within the limits of endurance, no strain results, but there are several conditions under which the limit is reached and symptoms of eyestrain result. First, the presence of an error of refraction. This causes the eyes to make an adjustment of the focusing mechanism, in addition to the ordinary focusing for the distance of the work. The effort may be because of the magnitude of the error or because it necessitates a more exact and trying adjustment. Second, the print may be poor or the lighting defective or unsteady, and the eyes are whipped up to more perfect adjustment, resulting in strain. Third, conditions which lower the tone of the neuromuscular mechanism. These include all debilitating conditions, sinus disease and practically anything which will lower the general body tone. Remember, however, that there are great variations not only in the power of different individuals but also at different times and under different conditions in the power of the same individual. An error of refraction or a muscle imbalance in one individual will cause no symptoms, while in another with perhaps not quite so stable a make-up, much discomfort will be the result.

The ferreting out of a reason or reasons for headache from the standpoint of the ophthalmologist requires a thorough history of the condition and a most careful examination of all the ocular structures, particularly the two mechanisms referred to. It is evident that the frequency with which the eyes are proven to be the cause of headache will depend upon the completeness of the ocular examination, the correct interpretation of the findings and the proper carrying out of the treatment. Many patients are able to identify their headaches as definitely related to the use of the eyes, yet there are many whose first symptom is "stomach trouble." Some have headaches following shopping tours, riding in street cars, trains, automobiles, etc., yet these invariably have normal vision or very close to normal. I wish to impress that it is not, as a rule, the individual with the gross visual disturbance that complains of the headache but rather the one who always sees well both for distance and near vision.

The first essential in an examination of the eyes in an obscure headache problem is a very exact and careful examination of the refraction. This is of the utmost importance and cannot be occomplished satisfactorily without the aid of a cycloplegic drug, certainly not in any one under the age of forty-five or in any one of whatever age, whose accommodation is at all active. Holding the accommodation in abeyance not only permits one to gain accurate knowledge of the state of the refraction of the particular eye, but not infrequently will bring to light a hidden muscle imbalance, one which was masked by the aid of the accomodation but held so at the expense of considerable nervous energy. The eyes must be put at rest, if one is to uncover the low grade oblique astigmatism, for I believe that in no other way can it be discovered. If there were no such thing as astigmatism, probably most refractions could be done without the use of a cycloplegic and at the same time there would probably be very few ocular headaches. It takes time to be sure, and there is a certain slight inconvenience to the patient, but the results more than compensate for the effort.

The layman has become confused by the propaganda of the nonmedical eyesight specialists regarding the use of "drops," and I dare say that many of the medical profession feel the same way, if one can judge by the frequency with which medical men refer patients to the refracting optician for glasses. In doing so they apparently forget that the examination of the ocular mechanisms is as much a medical affair as that of any other part of the body. And certainly the frequency with which eyes have been blinded by the failure of nonmedical men to recognise disease is sufficient reason in itself to urge patients to have their eyes examined by those medically trained.

I wish here to call your attention to two cases seen in the past few months, both patients having previously been under the treatment of optometrists. One had lost the central vision of one eye and the fellow eye was failing rapidly. Examination revealed a marked retinitis with numerous hemorrhages throughout both fundi. An examination by an internist revealed the fact that the patient was suffering from diabetes. This patient was wearing a pair of dark blue glasses, when she came to my office, one of many pairs which had been prescribed.

The second patient was partially blind in one eye, with the visual field reduced to an extremely narrow periphery and failing vision in the other eye. Examination revealed a very marked retinochoroiditis, specific in origin. Wassermann four plus. This patient had been treated by colored lights in one of our so-called eye institutes.

The careful correction of the refractive error, found when the eyes are under the influence of the cycloplegic, by the wearing of glasses, especially the full correction of any astigmatic error, not infrequently produces a very beneficial effect on the patient's distressing symptom of headache. And as I have stated before, the error need not be a gross one. Frequently there is little if any change in the visual acuity with or without glasses, but the patient is benefited. As an example, I will cite a case in which the vision of each eye was normal.

A man, 39 years of age, robust and physically active complained of "bilious attacks," tightening in the back of the neck and invariably a week-end sick headache. There was no disturbance of the neuromuscular mechanism, except a markedly diminished convergence. Under profound cycloplegia, a very low grade oblique astigmatism was found. This correction was prescribed, to be worn constantly, with the result that now for several months he is entirely free from his "bilious attacks" and does not have his week-end headaches. Incidently, his convergence faculty improved immediately he began to wear his glasses.

Any complete refraction should always include a careful examination of the neuromuscular mechanism of the eyes. It is just as important as the use of a cycloplegic in determining the amount of visual error, but it is, unfortunately, the one phase of an ocular examination most neglected. The careful observer, studying the ocular muscles in any case of headache, will be fully rewarded for his efforts. At times muscular defects are quite manifest, but I refer to those cases without manifest strabismus, those patients with just enough disturbance to produce fatigue, in their efforts to maintain binocular single vision.

There may be a latent horizontal imbalance, the eyes having a tendency either to turn in, so-called esophoria, or out, exophoria; there may be a latent vertical imbalance, so-called hyperphoria or there may be a lowered ability to properly converge the eyes, a very necessary requisite in maintaining binocular single vision in near work. The eyes in these conditions are not apparently out of line, there is no manifest strabismus and the patient does not see double except perhaps momentarily, but his ability to maintain single vision is dependent upon the amount of reserve energy he has in order to whip up those nerve centers that control the ocular movements. When his reserve energy is gone fatigue sets in and is manifested by headache.

As I have stated before, these latent ocular muscle imbalances are not infrequently passed over in the casual examination and are only revealed either by paralyzing the accomodation or by the use of prolonged monocular occlusion. This is a most valuable procedure in these suspected conditions, as it tends to break up the natural fusion forces that help keep the two eyes from deviating. Of all the muscular imbalances, the hyperphorias or vertical imbalances probably produce the greatest number of symptoms, particularly headache and nausea. The human has no ability to lower one eye while he raises the opposite one, for the associated vertical movements of the eyes, as you know, are confined exclusively to upward and downward rotations. Many of the so-called sick headaches and migraine-like attacks are due to this type of ocular muscle imbalance.

These deviations may be corrected in various ways. Sometimes the correction of the refractive error corrects the muscle imbalance. Again, one may use prisms if the deviation is of low degree, or prism exercises may be useful. As a last resort, surgical intervention may become necessary. As an example of this type of eyestrain causing headache, I wish to cite this one case.

A woman, age 44, gave a history of "sick headaches," occurring all of her adult life at least once every two weeks and incapacitating her for two days. She had had many complete gastrointestinal studies, also numerous ocular examinations. She was wearing glasses which gave her normal vision in each eye, and without her glasses the vision of the right eye was normal, and the left slightly subnormal. A careful examination of her refraction revealed practically no change from the glasses which she was wearing (a low grade hyperopic astigmatism, axes oblique), but in testing the neuromuscular mechanism there was a suspicion of a vertical imbalance. Monocular occlusion was done for six hours and then it became evident that there was a vertical imbalance of five degrees. This was corrected by incorporating prisms in her lenses, with the result that the patient's sick headaches have entirely disappeared. She has not had an attack now for a period of ten weeks.

One of the reasons for the skepticism of medical men in considering eyestrain as a cause of headache is the inaccuracy of certain refractions, and this usually is due to the lack of the use of a cycloplegic in the refraction. Many ophthalomologists are today throwing away the results of this definite knowledge regarding the use of a cycloplegic in their desire to gratify the haste of patients who naturally wish to avoid the inconvenience caused by the interference with their reading vision. Fitting glasses is not refraction. Any complete refraction includes a thorough examination of the eyes, the determination of any refractive error, the presence or absence of any muscular imbalance, the examination of the fields of vision, especially that delicate mechanism of central vision and the normal blind spots and lastly a thorough examination of the ocular fundi.

To summarize some of the important points, in every case of repeated headache the eyes should have a careful study. The presence of good vision is no ground whatever for thinking a given case of headache is not ocular. The severity of the headache does not depend upon the magnitude of the refractive error. The use of a cycloplegic is necessary, in my opinion, for a complete and thorough refraction, and a thorough study of the ocular movements should be a part of every refraction.

Stevens Bldg.

Optometry Problem. There is perhaps no problem confronting the medical profession today more difficult of solution than that of its relation to opticians and optometrists. Walter B. Lancaster, Boston (*Journal A. M. A.*, Dec. 15, 1928), believes that the reason the solution is so difficult is that the point has not yet been reached at which the satisfactory solution can be applied. To the public both the optometrist and the eye physician are necessities. Some regard the optometrist as a necessity, the eye physician as a luxury. If one were sufficiently interested, he might try to devise a plan for the care of the ocular needs of the public by eye physicians exclusively. Just as the dentists have succeeded in organizing a subdivision of medicine into a satisfactory specialty, so the optometrists will in time. To give the optometrist a training that would make him competent would be to eliminate the optometrist by making him an eye physician. Cooperation between eye physicians and optometrists would, if it were possible, rebound to the advantage of the public and the optometrists. If optometrists could refer cases to eye physicians for investigation with the expectation of getting the patient sent back to them for glasses, with the same sort of friendly spirit of cooperation that exists between medical consultants, what a fine thing it would be for the public, at least! Not a few ophthalmologists have said that they would be glad if it were possible to cooperate with optometrists, and some already have established a basis of cooperation with a few.

MALARIAL TREATMENT OF NEUROSYPHILIS

PRELIMINARY REPORT *

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It would seem fitting at this time to make a preliminary report of the results obtained after one year by the malarial treatment of general paralysis. It may be of interest to know of our early difficulties connected with the importation of benign tertian malaria. The first attempt to import the organism into the Northwest was made in March, 1927. Following the experience of others, that it was possible to keep the plasmodium alive as long as forty-two to forty-eight hours in citrated blood, the writer entered into communication with Dr. J. R. Driver of Cleveland, Ohio.

To carry out such an experiment, he hermetically sealed three ampules, each containing 10 c.c. of citrated malaria blood, and placed them in a thermos bottle which was shipped by air mail to Seattle. Due to poor air mail connections, the trip required fifty-six hours. However, 10 c.c. of the blood was inoculated subcutaneously into a case of general paralysis. No febrile reaction was obtained, due to the death of the plasmodium in the fifty-six hour interval.

As pointed out in a previous article, one must be sure that the plasmodium is that of benign tertian malaria and from a proven strain. While in this district an occasional case of malaria is picked up, it is usually a tropical malaria, and such a strain if transmitted to another would probably produce a fatal result. Too much care cannot be exercised in the selection of the type of malaria that is to be used for inoculation purposes.

Following our air mail failure, we selected a patient who was then sent to Dr. Driver in Cleveland, where he was inoculated intravenously and returned to Seattle. This case ran a typical malarial fever.

Due to the early and enthusiastic support given this method of treatment by Dr. Arthur Burns of Seattle, formerly President of the A. M. A. of Vienna, the aid was enlisted of Dr. A. E. Stuht, commissioner in charge of the State Department of Health. From our first case, two general paralysis cases in the Western State Hospital were inoculated. Drs. Taylor and Rea have since successfully carried the original strain through some fifty cases of general paralysis.

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Dr. Doughty of the Northern State Hospital and Dr. Oliver of the Medical Lake Institution subsequently introduced the malarial treatment into their hospitals from the original strain imported from Dr. Driver.

SELECTION OF CASES

It must be stated that the ideal time for the malarial treatment is in the preparetic stage, and not in the advanced stages when actual destruction of nervous tissue has taken place. The institutions receive, as a rule, only the cases that are well advanced and are transferred to the state hospitals, when they can no longer be managed on the outside. Consequently the mortality rate will be higher and the percentage of remissions lower than cases treated in private practice.

COMPLICATIONS

In the tabetic and taboparetic, lightning pains and gastric crises are greatly exaggerated by the malaria and are most distressing during the fever. With the termination of the malaria these symptoms are greatly diminished to complete freedom. Bronchial pneumonia has been the chief cause of death.

It has been pointed out by some writers that, as the strain is passed from host to host, it increases in virulence until it cannot longer be controlled by quinine. We have experienced no such results. In the opinion of the writer, where such unfortunate results have occurred, it has not been due to an increase in virulence of the original strain, but the inoculation of malaria has lighted up a previous tropical malaria in the host, and when this is transmitted it becomes a malignant condition. Care in the preliminary history will elicit any information concerning previous malaria, and such cases should not be used as donors for the benign tertian malaria.

ANALYSIS OF RESULTS

Since our first case, inoculated April 10, 1927, a total of 138 have been treated with the following results. While the time interval has been too short for definite conclusions, there is now sufficient background to this work to anticipate about the same percentage of results as obtained by others. Bunker and Kirby[1] report that at least 50 per cent of their cases manifested a definitely favorable response.

Cases treated in the three State institutions:

Complete remissions. Discharged from hospital	28
Complete remission. Ready for discharge	9
Improved. Able to help with ward-work	34
Improved, slight	12
Unimproved	35
Dead	20
	138

In some of our cases the results obtained were most striking. Unfortunately there is no way of determining before treatment what results may be expected. Some of the cases, where improvement was hardly to be expected, came into a full remission and have remained so for the past year. In some of the cases in young, vigorous adults who were excellent malarial risks, no improvement was obtained. As previously stated, the earlier the treatment is instituted, the better the result. Unfortunately in most cases of general paralysis the time of the original infection is difficult to elicit.

In order to more definitely picture some of the results obtained, a few cases will be quoted.

Case 1. Photographer, age 47, was transferred for malarial treatment by the Neurological Department of the City Hospital. This man was confined to the padded cell, and had been under restraint in the hospital, habits filthy. He was inoculated with malaria, allowed twelve fevers, and on tne completion of his malaria was transferred to the Western State Hospital, where he was given a total of three grams of neoarsphenamine. He came into a full remission and has been paroled to friends in California.

Case 2. Hotel porter, age 37, who had had five years of intensive treatment for syphilis of the central nervous system, was rapidly developing tabetic symptoms to such an extent that he had to resign his position in the hotel because of progressive weakness, staggering gait and the persistence of lightning pains.

Since malaria he has gained in strength, has been free of lightning and rheumatic pains and has resumed his position as porter in one of the larger hotels, where he is at present handling the heaviest of luggage. While not looked for as a result of this treatment, this case obtained a marked improvement in vision. The left eye changed from a -200 to a -125, and the right from -150 to -100.

Case 3. Male, age 36, married. Primary lesion twelve years ago. Psychosis dated back two months. Diagnosis general paralysis. He was inoculated intravenously in Seattle, July 12, 1927, with benign tertian malaria and transferred to the State Hospital at Medical Lake, where he had twelve malarial paroxysms, following which he received six injections of neosalvarsan. He gained eighteen pounds in five weeks, and left the hospital in a complete remission on September 9. Reports about this patient are very favorable, and he is supporting himself and his family.

Case 4. Male, age 48. No history. Diagnosis general paralysis by neurologist at Medical Lake State Hospital. Inoculated September 16, 1927. Completed nine paroxysms when fever spontaneously aborted. This patient received, following malaria, six injections of neoarsphenamine, three of sulpharsphenamine. He left hospital in complete remission on December 18. In eight weeks he gained twenty-five pounds.

Case 5. Male, age 42. Advanced paretic. Prognosis from consulting neurologist had been that he would not live longer than three to six months from date of his examination which had preceded malarial treatment by four months.

This patient had required special nurse attention constantly. He had to be dressed, fed, shaved, made no attempt to walk and when placed in a chair would remain there until moved. He was inoculated with malaria in April, 1927, allowed twelve fevers which were followed by ten injections of neoarsphenamine of .3 grams each.

Since malaria he has been able to eat at the table, dress himself, and take care of his personal wants in general. While he has not and never will make a full mental recovery, his being able to care for himself has been a great economic saving to a family of very moderate income.

Case 6. Male, age 43, weight 130 pounds. Date of original infection, twenty years ago. Speech difficult to understand, hearing normal, unable to write. Patellar reflexes absent. Romberg negative. Spinal fluid 4 plus.

Inoculated with malaria November, 1927, and allowed twelve fevers which were followed by ten injections of neoarphenamine of .3 grams each. This patient made an excellent recovery. The first notable improvement was in the hand-writing and speech. After malaria he wrote several sentences in a fairly clear hand. This case has made a steady improvement, has been able to resume the management of his ranch, and has returned to his desk in a local bank, of which he had been a member of the board.

Case 7. Male, age 40. Diagnosis taboparesis. Inoculated August 3, 1927. After completing twelve paroxysms, patient received six doses of neosalvarsan. Left State Hospital as complete remission February 7, 1928. He gained eighteen pounds in eight weeks.

The time of the remission has been a variable one. Some cases have come into it during the febrile period, some at the end of treatment, others after a period of three to four months. In general, however, some improvement is noted with the termination of the paroxysms. Hand-writing and speech improve early.

General paralysis is given to spontaneous remissions, but its type is not as complete or of as long duration as that brought about as the result of malaria. According to Speigel,[1] 19 per cent of general paralysis cases come into a spontaneous remission of variable length, while following malaria 33 per cent have remissions. Three of Wagner-Jauregg original nine cases have been in complete remission for over ten years. Bunker and Kirby[2] report a series of cases that have been in remission for three and four years.

TECHNIC

In the treatment of our cases we have followed the method of Wagner-Jauregg, allowing twelve fevers as the maximum. We have been guided by general physical examination, and blood pressure has been our guide for the continuance or interruption of the fever. A falling systolic pressure to 90 has been our sign to interrupt the fever. In several cases it was necessary to do this by quinine, allow the blood pressure to raise fifteen to twenty points, and provoke the return of the malaria by the intravenous injection of typhoid vaccine. In one of our cases a patient by mistake received twenty gr. of quinine in place of five, which was given for the purpose of interrupting the paroxysms, and we were able, after five injections of typhoid vaccine, to provoke a return of the malaria.

Benign tertian malaria is very responsive to quinine. Five gr. as a rule has been sufficient to stop the paroxysms for one to several days. Quinine is never given in the presence of a rising temperature. If the fever is to be interrupted, the quinine is given when the temperature has dropped to 100° or below, for the reason that, if given during a rising temperature, the toxic products of the malaria, plus that produced by destruction of quantities of red blood cells after quinine, is dangerous to an already weakened somatic system.

CONCLUSION

As Gerstman[3] points out, in general paralysis we are dealing with a lethal disease, a condition which progresses to a fatal termination in about one to four years. Kirby[2] gives the average length of life, once general paralysis is established, as one and one-half years. With such a known prognosis, we are justified in producing a febrile disease which is attended with some danger.

It is the opinion of the writer that every case of general paralysis should have the benefit of malarial treatment, providing there are no contraindications.

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Vomiting of Pregnancy. John P. Gardiner, Toledo, Ohio (*Journal A. M. A.*, Dec. 22, 1928), discusses vomiting of pregnancy. He concludes that the vomiting of pregnancy is a self-limiting disease. Vomiting, as with yawning, respiration, urination and defecation, is a mixed primordial function. Menstruation is associated with an increased intestinal gradient and pregnancy is associated with a decrease, possibly the result of a substnace given off by the chorion of the zygote. The time of greatest activity of the chorion corresponds to the time of the greatest frequency of the vomiting. Experimental work on dogs has shown that the pathologic changes induced by the vomiting of pregnancy are difficult to distinguish from those of inanition. The human being, because of the upright position, is the only mammal subject to the vomiting of pregnancy. The immediate cause of death is probably exhaustion.

A NEWSPAPER MAN'S IMPRESSION OF THE MEDICAL PROFESSION*

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Of The Morning Oregonian, formerly Executive News Editor of The Oregonian and Assistant Educational Director of the U. S. Public Health Service.

As a lay member of the writing profession, I am very much interested in the medical profession. You have asked me to give you a newspaper man's impression of your profession, and while I could say many favorable and complimentary things, I suspect that you want me to offer something critical, from which you may or may not profit.

I believe with J. B. S. Haldane, the biochemist of Cambridge University, that science is vastly more stimulating to the imagination than are the classics, and strictly speaking a man in the writing business should believe heart and soul in the classics which I do. But I believe also with Haldane that "the products of this stimulus do not normally see the light of day because scientific men as a class are devoid of any perception of literary form." It follows from this, which is seriously one slant of my impression of the medical profession, that you are sadly in need of a poet among you, one who like Homer and Virgil can show the average man some of the beauty of his own life and the artistry of the medical and surgical profession.

My impression of the medical profession in this particular is that as a group you are not living up to the ideals of Claudius Galen, one of the early Greek physicians (131-200 A.D.) who studied medicine as thoroughly as the opportunities of his age permitted and left eighty-three of his writings to guide you and the thousands who came after him in the study of anatomy and physiology. In the large acquaintance I have today through my work as a newspaper man and formerly as a U. S. public health officer, I know of no one doctor or surgeon who has left so many writings of value and yet this is a day of the written word, a day of stenographers, dictaphones and typewriters, while Galen wrote in a day of ponderous parchments and at a period when his time belonged to Marcus Aurelius. Because he wrote it down he was the authority in medicine up to the sixteenth century, and his study and observation of the pulse in considering and determining the nature of disease was the spark that first lighted the way to that almost magical progress which has marked modern medicine. But Galen wrote it.

Going back still farther, the most famous physician among the Greeks, your own revered Hippocrates, left some sixty volumes, either written or inspired by himself. Assume as the records show, that only one-tenth of the writings ascribed to him were written by him, yet you have a veritable library compiled in a day when writing was a slow and laborious process, compared with facilities at your command today.

Your Hippocratic oath does not admonish you to write but I venture the impression that many of you are not living up to the spirit of Hippocrates, when you fail to put into the record some of the product of your research and thought, some of the results of your experiments and observation. You cannot plead that modern medicine requires caution in employing the written word. Hippocrates was caution personified and, though he was frequently accused of letting his patients die because he took no steps to keep them alive, such measures as he believed sound he found time to put into the record, and he is one of your efficient guides today. Philosophy and writing go hand in hand, and Hippocrates like other philosophers first *thought* and then he *wrote*.

I venture another impression, that modern medicine in the aggregate is in danger of becoming too mechanical, too much based upon the law of trial and error, of precedent. This danger likewise has engulfed the legal profession for the ample reason that philosophy has been lacking in that profession as in yours, and philosophy comes with thinking and thinking is improved with writing. Medicine and surgery, except as they touch on physics and chemistry, belong to the philosophic as much as to the exact sciences. Hippocrates indulged in inductive philosophy, that is, he formulated theories by using the copious records of symptoms as a basis for thinking. And then he wrote.

Aristotle likewise dissected the lower animals and paved the way for protests from the anti-vivisection societies, but the analogies he drew from his dissections led to anatomic research and the work of the first experimental physiologist, Galen. Where would the medical and surgical professions have been but for the written words of these men and William Harvey who in the seventeenth century enunciated the theory and proof of blood circulation?

I make these comments on facts you all know because they emphasize what I am speaking about.

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*Read before the Fifty-fourth Annual Meeting of Oregon State Medical Society, Portland, Ore., September 20-22, 1928.

My impression is that the medical profession as a whole, through being so inept in the writing art, is squandering, so far as posterity is concerned, many of the fruits of this golden age of medical progress. Some months ago I asked a man of distinction and eminence in your profession what the world knew of the work of the many doctors in Portland, a city now eligible to be enrolled among the leading medical centers. He replied there is only one man in Portland medical life who would be instantly recognized by name if he walked into the Academy meeting in London, and that man is one of your youngest specialists in skin diseases and he and his work are known because he has found time, inclination and facility to write of some of his researches and to put into the record for all time some of the products of his thinking.

During the war Germany found it worthwhile to try out something which Embden, the professor of physiology in Frankfort University, discovered and had written about, that seven grams of acid sodium phosphate increases a man's capacity to do muscular work by 20 per cent and probably aids in prolonged mental work. A group of coal miners took it for nine months with great effect on their output, and with no after effects like alcohol. Thousands used it in Germany during a time when that country needed an abundance of muscular work, but except for the fact that Embden wrote his observation into the record the German authorities may never have used it.

Within the last two years the medical profession has probably made a million or so dollars for the butchers and meat packers by turning what used to be considered almost a by-product of the slaughter house into a food of the highest class and reputation. I refer to liver and the new fad of eating it to offset anemia and other ailments. I think a couple of doctors in Chicago or elsewhere in the east have taken a great deal of credit for this discovery, and yet I know that three or four years ago in Portland one of your own profession made such enormous strides in detecting the nutritive value of liver that today several of his patients who normally should have been dead long ago are walking the streets.

I have always regretted that your code of ethics made it impracticable for this eminent young doctor to write an article the layman could have understood on this matter of liver. The best I could do as a purveyor of good, bad and indifferent news in the community was to reprint from one of your medical journals a highly technical paper which he had written on this subject, but it was not a year after that until these eminent eastern doctors translated this liver theory into language for popular comprehension and they rose to some degree of fame and the meat industries cashed in on it. I think the world had a right to know that Portland physicians had for the last several years been developing this liver theory.

It has been said that biologic theory consists largely of some ancient but not very easily stated truths about organisms in general, due largely to Aristotle, Hippocrates and Harvey, a few principles by Darwin and Mendel and a vast mass of facts about individual organisms and their parts which are still awaiting adequate generalization, adequate thinking-about. Again, among my impressions of the medical profession since you have asked me, is that modern medicine needs a Darwin to shock it into robust thinking about the many masses of data already collected, and unless that Darwin writes with a winged pen, I am afraid it will not count for much.

Another of my impressions of your profession is that modern medicine has had as much influence upon the modern social organization as has the industrial revolution. More and more the doctor replaces the priest and, whereas four hundred years ago most of us died in childhood, today we approach fifty. Less and less do we think of a good death but more and more of a good life. Institutions based on early death have collapsed. The old English land system, predicated on the assumption that the father would die at forty and be succeeded by his eldest son, aged twenty, finds today the father living to eighty and the son hanging around until he is fifty or sixty to get his unentailed competence, while younger and older sons are striking out for themselves.

Forty years ago and even less men were old at forty and fifty years of age and they sat either huddled up at their firesides or shambled around on canes and became a general nuisance. Today what is typical of the man of forty, fifty or sixty years of age? He is in the prime of life with a good competence from his business or profession and he goes to New York or Paris or any of the world centers and gives the young fellow a run for his money, because the latter, though he is possessed of health and vigor, hasn't yet acquired that competence which is necessary for high living in the gay places.

Speaking more bluntly, it's my impression that the medical profession is pretty largely responsible for the "sugar daddies" who are getting the scare headlines on our front pages and our society pages today. But for you men they would have withered up and figuratively speaking died instead of sprucing up and knocking them dead, as they do today at the tender age of fifty or sixty.

The nineteenth and twentieth centuries brought brilliance to your profession. The chemistry of digestion and secretions, the mechanism of circulation and respiration, and the functions of the brain and accessory organs were revealed, but your arduous labors and heroic experiments are dimmed in their brilliance by the fact that, so far as the lay public is concerned, you as individuals have hidden your light under a bushel.

I have an impression that is not critical, and I can embody it in the words of an eminent writer of a preceding generation. It has to do with the high estate to which your profession has risen in recognizing your place in the sociology of modern progress. Bad as I know you are in your willingness to assist scientific and lay organizations in that part of public health work that calls for the prompt and full reporting of communicable social diseases; deaf as I know you are to the clarion call of socially minded laymen who would rally you to new social movements closely allied to your profession; slow as I know you are to accept the outsider in matters of therapeutics; as far apart as many of you are in the movement to standardize technic in major operations and fundamental treatment, and fallible as I know you will admit you are in the science of diagnosis, I also know that you are of all professions probably the least miserly of your wealth of knowledge. My impression is that of all professions you are probably most generous when it comes to giving of your knowledge to the maimed, the halt and the blind who but for your largess would die untimely deaths or endure unmitigated suffering. I can truthfully give as my impression, based on quite a few years of association with the medical profession, a remark once made and written into the records by Robert Louis Stevenson:

"The physician is the flower (such as it is) of our civilization; and when that stage of man is done with and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practice an art, never to those who drive a trade."

EPIDEMIC PEMPHIGUS NEONATORUM (IMPETIGO?)

A METHOD OF TREATMENT *

J. ARTHUR KEHO, M.D.
TACOMA, WASH.

From the maternity department of several hospitals is heard complaint at various times of an epidemic pemphigus neonatorum. The condition manifests itself in the form of vesicles, due to a hypersecretion of lymph under the epidermis of the new-born infant. From this lymph can be isolated a gram-positive diplococcus. This organism grows as a staphylococcus in culture media.

If the lymph from these vesicles be allowed to remain on the unbroken skin of a new-born child, in from five to seven days many new vesicles will make their appearance on this location. The disease is very contagious, especially for infants. Some, however, seem to have an immunity, perhaps 20 per cent. It is peculiarly resistant to ordinary antiseptics, such as ammoniated mercury, mercurochrome, alcohol, anilin gentian violet, tar ointment, and ultraviolet light; but seems to be very susceptible to the action of copper.

Having observed a number of sporadic cases, and made a microscopic study of the bacterial flora of the vaginal discharge of several hundred maternity cases, one is forced to the conclusion that the organism is contained in the vaginal discharge of a few mothers, and at the time of birth the child is infected with it. Once the disease thus gains admittance to the nursery, it spreads rapidly to the other infants.

Should the conclusion that the child is infected at the time of birth be correct, then the time to apply the antiseptic is at the earliest possible moment, before the organism has invaded the child's skin, as well as before it has been distributed to other infants in the nursery. The method is to use a 1 per cent oleate of copper ointment, prepared with lard or olive oil for the removal of the vernix caseosa. It was used at both hospitals there during an epidemic, and the trouble promptly subsided.

During an epidemic at one of the hospitals two years ago, this ointment was used for the removal of the vernix from each child that came to the nursery. On these no vesicles appeared. On those that were already affected the skin cleared up in a few days after its use. There has been no epidemic in that hospital since.

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* Reported at a meeting of the Obstetric Committee of the Tacoma General Hospital, Tacoma, Wash., Nov 6, 1928.

NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington and Idaho

Devoted to the Interests of the Medical Profession of the Pacific Northwest

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EDITORIAL

THE BEST YEAR FOR MEDICAL PRACTICE

Frequently in recent years public attention has been centered upon the marvelous progress and discoveries in medical science during the past quarter century. Many older physicians have vivid recollections of the devastating scourges from typhoid, diphtheria, malaria, yellow fever, cholera and bubonic plague, all of which have been brought under control, due to the discoveries of the bacteriologists, pathologists and chemists and their practical application to existing epidemics. World-wide cooperation of man is the only factor lacking to eliminate all these diseases from the face of the earth. Many other diseases, such as diabetes, pernicious anemia, tuberculosis, general paresis and others have been brought under control and their tragic results strikingly curtailed through the scientific discoveries of the medical profession and their application to present day practice. Cancer is the outstanding disease which has thus far baffled the efforts of research workers throughout the world. This fact, however, has not established despair in the hearts of earnest investigators. Although the goal has not yet been attained, there is every reason to believe the concealed cause of this destructive malady will yet be discovered and another victory be added to the glorious discoveries of medical science.

The technical perfections and accurate standardizations of surgical procedures have opened the doors for many a hopeless condition, closed to relief by medical measures but available for cure at the hands of the skillful surgeon. Aided by asepsis no section of the body is excluded from inspection and remediable surgery at the hands of the artistic operator. Mention should also be made of the manufacturer's ingenuity, whose assistance has enabled the surgeon to devise apparatus and instruments for the rectification of pathologic conditions which a few years ago would have been considered beyond the realm of surgical attack. Within a few years the methods employed under physical therapy have been added to the physician's and surgeon's equipment, by whose skillful application relief can be assured in many conditions that have resisted usual modes of treatment. The recent graduate, beginning practice with these and many other accomplishments at hand, can scarcely realize the inheritance at his command which has descended from struggles and failures in the past, now taken for granted as existing facts. With a wealth of modern pharmaceutical products available and a knowledge of their applications, with so many incurable diseases of the past now under control, with perfect surgical knowledge at its command, the medical profession can view the coming year with assurance that it will be the most successful in the history of the world for the control and the relief of disease in all its phases.

A New Year greeting is extended to all our readers with the hope that they may obtain that satisfaction in the coming year of practice which all faithful and conscientious physicians may justly anticipate.

HEALTH PROPAGANDA

Preservation of life is the leading instinct of mankind. This is the basis on which the patent medicine industry has been developed and has flourished through the period of many generations. Inspired by ingenious newspaper advertisements and the exhibition of seductive literature, the susceptible public has invested large sums of money in these remedies in the belief that their ailments would be alleviated. This widespread confidence in published statements regarding diseases and their treatment has furnished life and sustenance to a multiplicity of quack doctors and their alleged marvelous remedies. These practices have generated confidence in self-medication on the part of multitudes of people, who have been content with diagnosing and treating their own ailments without the aid of medical science and its practitioners who have made a life study of these subjects.

In recent years have arisen many methods and enterprises for imparting information to the public, in the hope of improving the health of the general population by means of proper diagnosis and suggestions as to rational treatment of recognized diseases. The greatest emphasis from the medical profession has centered in the periodic health examination, by the systematic practice of which it is hoped to anticipate the appearance of certain diseases, thus prolonging life and the general wellbeing of mankind. As so frequently happens when a beneficent procedure is suggested by physicians for widespread application, commercial interests have been quick to recognize the possibility of profit in their exploitation and have hastened to offer their services to an expectant and interested public. Following the suggestions emanating from the medical profession that these periodic health examinations would result in national benefit, numerous lay organizations have been established to promote this sort of examination. The health institute, the life institute, the welfare council and other organizations of similar import have arisen all over the country. Their inspiring literature has become voluminous, and the public is urged from numerous sources to ascertain the physical condition of the individual and accept assistance through these organizations as to treatment for ailments and mode of life to promote wellbeing.

Unquestionably these efforts have accomplished good. It is certain these organized procedures have relieved the medical profession of much of the machinery of the periodic health examination. At the same time there must be satisfactory financial returns to these organizations, else they would not multiply and continue in existence. In the meantime how do the medical men fare whom they employ for the professional end of this work and who are entitled to reasonable remuneration in addition to what is paid the lay employer? One can but speculate as to the future outcome of such widespread efforts to benefit the public.

Already a note of warning has been sounded from various sources, lest harm may result to some individuals from these periodic examinations unless carried out by judicious and far-sighted examiners. When the examinee pays his fee, devoting considerable time to the examination, but to learn that he is afflicted only with flat feet, a little acceleration of the heart with perhaps a roughness of one sound, together with visible tonsils or other minor defects, provided he is a normal and sensible individual, he will rejoice that his physical condition so nearly approaches perfection. If, on the other hand, he chances to be of a neurotic or introspective disposition, the slight ailments which are noted, together with the wise expression or shrug of the shoulder which the examiner may exhibit unintentionally or otherwise, may serve to impress upon the receptive mind the existence of some concealed ailment, the suppressed consciousness of which may help to magnify his neurotic tendencies. Herrick[*] calls attention to the possible danger where physicians who may be negligent or careless feel the necessity of calling attention to slight departures from normal that may be of no moment but which may produce worry or genuine nervous ill health in the susceptible individual. The objective in view is said to be the recognition of disease in its preclinic stage. But how rarely is a disease recognizable until the patient complains of some symptom? If the ailment be obscure, the aid of roentgenology, blood chemistry, metabolism test and other diagnostic refinements are needed to establish a diagnosis, though these are not contemplated in the routine periodic examination. These observations are not intended to depreciate the value of the periodic health examination but to warn against overemphasis of unimportant findings and to suggest that the routine examination may not be the last word as to the individual's physical condition.

CONSIDERATION FOR THE OFFICE PATIENT

When in the course of years of practice one becomes a successful and popular practitioner, the question of skillfully handling office patients often becomes a matter of serious consideration. It may not be so urgent in case of the general practitioner, but if one belongs to the chosen few, recognized as specialists, it is apt to develop into a matter of vital import. Among a group recently discussing the medical profession, one lady inquired with considerable vehemence why it was that doctors did not treat their office patients by appointment and thus obviate the necessity of wasting a whole afternoon, often times in fruitless effort to get in contact with the great man. It is well known that many physicians handle this feature of office practice in a careless and inefficient manner. They will commonly instruct patients to call around in the afternoon during office hours. If the usual custom prevails of first come first served, the patients assemble en masse at the beginning of the office period, hoping thus to gain the favor of early attention. Some will necessarily spend the whole afternoon with tiresome waiting and, if the attendance is large, may often be dismissed, failing to make contact with the busy practitioner.

Recently a friend of the writer related his experience in a large eastern city where, without appointment, he called at a doctor's office to discover, greatly to his astonishment, that he could not make contact with this popular physician for three days, owing to the fact that all of his time was booked for two days in advance with patients by appointment, each one of whom had been assigned a brief specified period of a certain hour for medical attention. It would be a simple matter for every physician, whether his office practice were large or small to make definite assignments for visits from patients, thus conserving both his own time and that of his followers. How unnecessary is the too common practice of having patients spend hours in the waiting room which might be otherwise profitably employed, if each had a definite appointment for his consultation. If children accompany the parent, the situation is more complicated. One might also comment on the unfavorable psychologic effect on a hypersensitive patient who thus may spend an hour or two associated with other complaining individuals. When a doctor has once adopted this custom of office practice with stated appointments, he will not likely revert to the haphazard method of receiving patients at unknown and undesignated periods.

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[*] Herrick, J. B.: Comments on the Treatment of Heart Disease. J.A.M.A., **91**:1761, (Dec.) 1928.

WASHINGTON MEDICAL LEGISLATION

As a rule, at legislative sessions certain measures are introduced bearing on state public health, in which the medical profession has a vital interest, oftentimes of such a character as to be sponsored by them. In the present Washington legislature the medical profession is represented by Dr. W. J. Taylor, of Port Angeles, in the Senate and Drs. J. A. Durrant, of Snohomish, and H. C. Watkins, Hoquiam, in the House. All of these men have had sufficient legislative experience to make them valuable in the consideration of public health problems. In recent years the medical profession of the state has deferred to the Public Health League concerning legislation in which they have a personal interest. Its officials have been alert to all features of bills bearing on public health matters which have been introduced, and their influence has been effective to aid the passage of desirable legislation, at the same time serving to check that which has been pernicious. At the present legislative session the league has no measures in contemplation for introduction. It and its representatives will be satisfied with continuation of existing enactments.

It is reported as established that there will be a united effort on the part of chiropractors and other forms of drugless healers to secure a repeal of the basic science law, which was passed at the last session of the legislature. During the intervening period there has been a radical curtailment in licensing uneducated and inefficiently equipped practitioners of various sorts. The legislators at that time were convinced that the health of our citizens and the treatment of their ailments should be entrusted only to practitioners skilled in the sciences forming the basis for all forms of therapeusis. It is not believed they will be persuaded to recede from this attitude, which is being adopted every year by more state legislatures. Another bill, which it is stated will be presented and strongly supported, will be for the purpose of opening all hospitals of the state to the admission of patients treated by osteopaths, chiropractors and other drugless healers. This will doubtless result in much oratory bearing on the claimed infringement of individual rights, and a demand of equality among the representatives of various forms of treating the sick. This is not an occasion to recite the arguments bearing on this problem. They are available, however, and occasion may arise for assembling and detailing them for public information. There are rumors of other measures in contemplation which will have a vital interest for the medical profession and others interested in maintaining a high standard of public health. These will be considered as they are presented.

PATRONIZE THE ADVERTISERS

Advertisements are the chief source of revenue which serves to maintain a publication. Consequently the advertisers are justified in anticipating patronage from the readers of the magazine in which their products are displayed. We desire to solicit the attention and patronage of the physicians of the Pacific Northwest for the advertisers appearing monthly in this journal. They are worthy of support, since their ethical character and reliability are assured, as they are selected in accordance with the requirements of the Committee of Pharmacy and Chemistry of the American Medical Association. Therefore, the products advertised and the institutions featured can be accepted as trustworthy and dependable.

New Advertisements. Attention is called to the following new advertisements appearing in this issue. Anchor Products Company (page 30) presents surgical needles. The Sugar Institute (page 31) explains the benefits of sugar in the dietary. Laboratory of Clinical Medicine (page 16). Products of Lederle Antitoxin Laboratories appear on page 21.

MEDICAL NOTES

OREGON

Appointments at University of Oregon Medical School. In acknowledgment of his valuable services for ten years to the University of Oregon Medical School, John F. Dickson, head of the Department of Eye, Ear, Nose and Throat, has been appointed Emeritus Professor of Ophthalmology by the Board of Regents. Dr. Dickson intends to spend a portion of each year in California. The Department of Eye, Ear, Nose and Throat has been divided into Otolaryngology, headed by Ralph A. Fenton, Clinical Professor of Otolaryngology; and Ophthalmology, headed by Frederick H. Kiehle, Clinical Professor of Ophthalmology. Other appointments recently made by the Board of Regents are John N. Coghlan, Clinical Professor of Otolaryngology; Frank B. Kistner, Associate Clinical Professor of Otolaryngology; and Joseph L. McCool, Associate Clinical Professor of Ophthalmology.

Dr. Edwin E. Osgood, who recently returned from a year's leave of absence spent in study in Vienna, has been appointed Assistant Professor of Biochemistry and director of Clinical Laboratories. He is also Associate in Medicine.

The Board of Regents has made the following appointments in the Departments of Medicine, Surgery and Pediatrics: Noble Wiley Jones and T. Homer Coffen, Clinical Professors of Medicine; J. C. Elliott King, Clinical Professor of Dermatology; Ralph C. Matson, Associate Clinical Professor of Medicine; Harold C. Bean, Marr Bisaillon, I. C. Brill, J. Allen Gilbert, William S. Knox, Ray Matson, Arthur Rosenfeld, Charles Edwin Sears, Joseph N. Short, Assistant Clinical Professors of Medicine; Lyle B. Kingery and Harvey G. Parker, Assistant Clinical Professors of Dermatology and Syphilology; J. Guy Strohm, Assistant Clinical Professor of Syphilology; J. Earl Else, Robert C. Coffey, William B. Holden, Richard B. Dillehunt, Clinical Professors of Surgery; Otis F. Akin, Thomas M. Joyce, Charles R. McClure, Ernst A. Sommer, Associate Clinical Professors of Surgery; Alvin W. Baird, Charles D. Bodine, Louis P. Gambee, Luther T. Hamilton, George Norman Pease, Eugene W. Rockey, Paul Rockey, Assistant Clinical Professors of Surgery; James Rosenfeld and L. Howard Smith, Associate Clinical Professors of Pediatrics.

Hospital for Indigents Asked. Dr. Harry R. Cliff, Multnomah County physician, in an address before the annual convention of judges and commissioners of Oregon at Portland, Dec. 17, recommended the establishment at Portland of a state hospital for indigents from counties outside Multnomah. He pointed out the fact that the faculty of the University of Oregon Medical School could be employed to serve as a staff for the proposed institution, which would increase greatly the teaching facilities in the medical school.

X-Ray Apparatus Donated to Cancer Clinic. During December a $10,000 deep x-ray therapy machine was installed in the cancer clinic of the Good Samaritan hospital at Portland. The new apparatus, which was the gift of an anonymous friend of the hospital, increases greatly the efficiency of the cancer clinic in the treatment of malignant disease.

Veterans' Staff Named. The following officers were ordered transferred Jan. 1 from the Tacoma hospital to the new United States Veterans' hospital at Portland; Dr. George E. Pfeiffer, chief of surgical service; Dr. Isaac A. Dix, chief of medical service; Dr. William O. Manion, medical specialist in tuberculosis.

Prize Awarded. The Committee on Scientific Research of the American Medical Association has awarded a $250 Van Zwalenburg grant to Dr. George E. Burget, head of the Department of Physiology of the University of Oregon Medical School. Dr. Burget is working on the problem of "Hydraulic pressure in a closed loop of the small intestine and the influence of the pressure as a factor in the clinical condition of the animal."

Health Demonstration Head Appointed. Dr. Estella Ford Warner of Salem was appointed by the Commonwealth Fund Dec. 6, to the position of director of the Marion County Child Health Demonstration, made vacant recently by the resignation of Dr. William DeKleine. Dr. Warner has served as pediatrician for the Health Demonstration since 1925, previous to which time she was medical director of the Bureau of Child Hygiene of the Oregon State Board of Health.

Portland City and County Medical Society, at a meeting at the Woman's Club Building Dec. 7, was addressed by Professor Albert Bracket of the University of Brussels, Belgium. His subject was "Heredity as an Embryological Process."

Dr. Wilmot C. Foster, Assistant Professor of Anatomy, has resigned from the staff of the University of Oregon Medical School to continue work at the Mayo Foundation.

Dr. Richard B. Adams has opened a clinical laboratory in the Stevens Building, Portland. He is associated with Miss Emily Burgman who was formerly laboratory technician in the Pathology Department of the University of Oregon Medical School. Doctor Adams is now interning at the Michael Reese Hospital, Chicago.

Dr. L. D. Inskeep, former Douglas County Health Officer, has resigned to enter private practice in Roseburg.

WASHINGTON

Hospital Contract Delayed. Physicians of King County Medical Society, Seattle, through their president, Dr. David C. Hall, were successful in obtaining a delay in the plans of the outgoing King County commissioners to award immediately the contract for the proposed new City and County hospital. The temporary restraining order was sustained Dec. 12 by a court injunction. Superior Judge Mitchell Gilliam did not support the contention of the physicians that fraudulent conspiracy had been entered into, but pointed out that the contract could not be lawfully awarded until a detailed estimate had been included in the county budget for 1929 to conform with the requirements of the state budget law.

Dr. Malcom T. McEachern of Chicago, Ill., director of hospital activities of the American College of Surgeons, who was in attendance at a hospital convention in Seattle at the time of the court proceedings, urged against undue haste in planning and construction of the new institution. While in Seattle he inspected several proposed sites, and was quoted as being in favor of those in the University district and on Yesler hill and against the present county hospital site at Georgetown.

Orthopedic Clinics Held. The Seattle Orthopedic Society held its annual clinics Dec. 14-15. Dr. Melvin S. Henderson, chief of the division of orthopedic surgery at the Mayo Clinic, was the guest of honor. On the opening morning a clinic upon disease and injuries of the bones and joints was held in the auditorium of the Medical and Dental Building. This was followed by an afternoon of golf at the Broadmoor Golf Club. The second morning was devoted to an operative clinic by members of the society, with discussions by Dr. Henderson. The annual dinner at the close of the session took place at the College Club. Mr. G. W. Carr of the Boeing Airplane Company spoke upon "Aviation Possibilities of the Pacific Northwest." Dr. Henderson delivered an address on "Treatment of Chronic Arthritis." The clinics were especially well attended by out-of-town physicians.

Minor Hospital Closed. The Minor hospital of Seattle, which for many years has taken care of hundreds of patients from Seattle and the surrounding territory, closed its doors Dec. 17. A local packing company in November petitioned for the appointment of a receiver for the institution. However, according to a statement made at the time of closure by Mr. C. J. Erickson, president of the Bethseda Hospital Association which operated the hospital, all of the hospital accounts would be settled without the necessity of appointing a receiver. He further stated that the reason for closing was the inability of the institution to compete with newer and more modern hospital plants in the city. There is a possibility that a new $200,000 structure will be built at some time in the future to replace the old one.

Anacortes Hospital Planned. The destruction by fire in November of the old Anacortes hospital has hastened plans already in contemplation for the construction of a modern fireproof hospital in that city. The Chamber of Commerce, the American Legion and several service clubs have decided upon a hospital drive during the month of December to obtain subscriptions for the new institution. In the meantime, a large twelve room house has been leased by Anacortes physicians and surgeons for use as a temporary hospital.

Medical Building Plans Announced. Details of the new medical and dental building in Tacoma, preliminary plans for which were announced in Northwest Medicine several months ago, have recently been made public. The new structure, work upon which is expected to begin within sixty days, will be twenty stories in height, thus making it the tallest building in the city. It will be located on the site now occupied by the old Masonic Temple and the Hoska Building on St. Helens Avenue, near Elizabeth Street, and will be called the Medical-Dental Tower.

Prosser Hospital Enlarged. The hospital at Prosser, which for several years has been conducted by Mr. and Mrs. Pruden, will soon be enlarged and improved by the addition of a new building now under construction. Three private rooms, a seven bed ward and a surgery will be located in the new wing.

Hospital Heads Meet. The annual meeting of the Northwest Hospital Association was held Nov. 30 at Seattle. Among the speakers was Mrs. Elizabeth Soule, director of nursing education at the University of Washington, who reviewed the present situation in the field of nursing.

Unlicensed Healer Fined. Thomas A. ("Uncle Tom") Ferguson of Auburn was fined $250. Nov. 16 by Justice John B. Gordon in Seattle. He had offered to cure a prospective patient having symptoms suggestive of cancer by means of a bottle of "Uncle Tom's remedy." The "patient" turned out to be Mr. Charles S. Manning of the department of licenses. A suspended sentence on a similar charge was given Ferguson in a Seattle court four months previously.

Grays Harbor Medical Society met at Aberdeen Nov. 21. Dr. H. G. Willard and Dr. W. B. Penny, both of Tacoma, addressed the members on chest conditions in children and on heart disease respectively.

Dr. E. M. Adams, for many years a practitioner in Arlington, has opened an office at Everett, where he will confine his work to genitourinary diseases.

Dr. N. Whitney Wear of Bellingham, coroner of Whatcom County, accompanied by his wife and son, sailed from New York Dec. 22 for a six months tour to Europe. Dr. C. E. Plumb has been appointed acting coroner during his absence.

Dr. Owen Taylor of Auburn suffered fractured ribs and a contused chest Dec. 10, when his automobile collided with another machine as he was attempting to pass a logging truck.

IDAHO

Hospital Taxation Upheld. Reversing the verdict of a lower court, the supreme court of Idaho, Dec. 11, ruled that Lynn Brothers Benevolent hospital of Pocatello must pay state taxes, in spite of the fact that it is listed as a charitable institution. The case was prosecuted at the instance of twenty-two taxpayers of Bannock County. The supreme court justice held that the finances derived from the personal incomes of the physicians who operated the hospital were so involved with those of the institution itself that it could not be called a benevolent hospital.

Dr. E. L. Berry, formerly of Hazelton, has taken over the practice in Buhl made vacant recently by the death of Dr. Albert McClusky.

Dr. H. P. Higgs, of Council, has moved to California for future practice. His location has been filled by Dr. Dryborough.

OBITUARIES

Dr. Sylvester J. Bridenstein, Seattle, Wash., died at the Columbus Hospital in that city Nov. 25, aged 78 years. He was born in Pennsylvania in 1851 and graduated from the State University of Iowa College of Medicine, Iowa City, Iowa, in 1875. After several years spent in practice in Nebraska, he moved to Port Orchard, Wash., in 1892. In 1904 he located at Seattle and remained in active practice there until his last illness.

Dr. Lewis Campbell Bowers, a pioneer physician of Boise, Ida., died at St. Alphonsus hospital at Boise Dec. 14, aged 75 years. He was born at Millersville, Ohio, in 1853, and graduated from Rush Medical College, Chicago, in 1886. In 1890 he located in Boise, where he practiced continuously until 1925, when he retired and moved to California. He returned to Boise six months before his death. He had acted as city and county physician of Boise, and was a past president of the Idaho State Medical Association. He was a member of the original staff of St. Alphonsus hospital.

Dr. John H. Hubbard, Grace, Ida., died suddenly at his home Dec. 12, aged 61 years. He was born at Muddy River, Nevada, in 1867, and graduated from Northwestern University Medical School, Chicago, in 1906. He practiced at La Grande, Ore., for several years, and in 1912 moved to Grace, where he remained until the time of his death.

Dr. Joseph J. Walker, Elk, Wash., died Nov. 28 while being transferred to a Spokane hospital, aged 44 years. He was born in 1884, and graduated from St. Louis College of Physicians and Surgeons, St. Louis, Mo., in 1908. He practiced at Opportunity for several years before locating at Elk in 1926.

Dr. C. Benson Wood, Los Angeles, Calif., died in that city early in December, aged 52 years. He was born in 1875, and graduated from New York Homeopathic Medical College and Flower Hospital, in 1903. For several years previous to the world war he was engaged in practice in Seattle. Later he was commissioned as major in the United States Army. Following the Armistice he located in Los Angeles.

Treatment of Acute Empyema Complicated with Bronchial Fistula. According to Ralph H. Bettman and Nathan N. Crohn, Chicago (*Journal A. M. A.*, Dec. 22, 1928), a bronchial fistula that occurs in actual pleural empyema almost invariably closes after artificial drainage has been established. Allowance can be made for the escape of pus and air from the pleural cavity and yet the consequences resulting from an artificial open pneumothorax can be prevented. The closed method of drainage is just as desirable in cases complicated with bronchial fistula as in the uncomplicated cases of acute empyema.

REPORTS OF SOCIETY MEETINGS

OREGON

JACKSON COUNTY MEDICAL SOCIETY

Pres., W. W. P. Holt; Secty., E. W. Shockley

Jackson County Medical Society met at the home of Dr. J. J. Emmens, Medford, Dec. 6. Election of officers for 1929 resulted as follows: President, Dr. G. W. Gregg, Ashland; vice-president, Dr. L. D. Inskeep, Medford; secretary-treasurer, Dr. E. W. Shockley, Medford. A paper on the subject of infant mortality was read by Dr. R. W. Sleeter.

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., D. C. Hall; Secty., C. W. Shannon

A general meeting of King County Medical Society was held at Seattle December 3, with President Hall presiding. About 125 members were in attendance. Minutes of the previous meeting were read and approved. The following applications for membership were presented: Drs. E. F. Corneliussen, D. C. Dever, C. M. Harger, H. H. Hewitt, D. O. Kraabel, J. F. LeCocq, Martin Norgore, C. A. O'Connor, N. K. Rickles, P. M. Rogers, and F. E. Wiebe.

Dr. E. Weldon Young read a memorial address on deceased members, their names being mentioned with proper comments on each. On motion of Dr. Snively it was voted that the names and photographs of deceased members be collected and placed in a permanent record book provided for that purpose.

Amendments to the By-Laws previously considered were adopted. One pertains to the officers to be elected at the annual meeting; the other provides that active members whose dues have not been paid by December 31 shall be automatically dropped from membership.

Officers of the society for the ensuing year were nominated.

Dr. R. S. Loving, Captain, Medical Corps, United States Army, read a paper on "Spontaneous Pneumothorax," with report of a case. The patient, a soldier, while at work was suddenly taken with dyspnea and dizziness. After a week of discomfort he was admitted to the hospital with physical signs showing the contents of the thorax were pressed to the right side by a large collection of air in the left pleural cavity. The writer reviewed the history of pneumothorax and its treatment. In this case air was aspirated on several occasions in the course of a month's time. It was cautioned that the removal of air must be gradual lest untoward consequences result from too rapid collapse, as occurred in one of the treatments with this patient.

A meeting of the Medical Section of the society was held Dec. 10, Dr. George A. Dowling presiding.

Dr. Millard T. Nelson of Tacoma read a paper, "Rational Management of Paralytic Ileus and High Intestinal Obstruction." Abdominal surgery is well standardized. Different end-results are obtained, owing to varied postoperative care and judgment. Experimenters have found in artificially high intestinal obstruction that blood chlorides fall, carbon dioxide combining power of the plasma increases and, when the blood chlorides have been depleted about one-fourth, there is a beginning rise of blood urea nitrogen. Animals die of exhaustion and starvation. The writer cited important early symptoms and clinical features with postoperative patients. The treatment in mild cases consists of sodium chloride solution in pectoral muscles. In severe late cases the patient receives all the tissues will tolerate, with intravenous injections of sodium chloride and solutions of glucose. The foot of the bed is elevated, sufficient morphine is given to increase rest, the stomach is regularly emptied and sodium bicarbonate is given by lavage or proctoclysis.

Dr. Torlief Torland presented a paper, "Lipiodal Injection in Pelvic Diagnosis," with lantern slides. In the use of intrauterine injections for diagnostic purposes collargol and sodium iodine solutions have failed because of their irritating qualities. Lipiodal is safest except in pregnancy and acute infections. The technic of its administration was given. For diagnosis it is of value in submucous fibroids, anomalies of uterine cavity and tubal infections. By this procedure we have a diagnostic aid as valuable as the pyelogram or the x-ray in gastric pathology.

SNOHOMISH COUNTY MEDICAL SOCIETY

Pres., H. R. Secoy; Secty., A. B. Murphy

Snohomish County Medical Society held its annual banquet at the Everett Golf and Country Club Dec. 4. A feature of the evening was the installation of new officers.

Among the visitors who made addresses were Dr. David C. Hall, Seattle, president of King County Medical Society and Dr. Arthur Crookall, Seattle, a member of the board of directors of the Washington Public Health League.

WALLA WALLA VALLEY MEDICAL SOCIETY

Pres., J. T. Rooks; Secty., C. J. Johannesson

Walla Walla Valley Medical Society held a meeting at Walla Walla, Dec. 13, with President Rooks in the chair. The secretary read minutes of previous meeting and regrets from leading physicians of the Northwest who were unable to be present.

Drs. Frederick Epplen of Seattle and Robert C. Coffey of Portland, addressed the society at a banquet at the Marcus Whitman Hotel.

Dr. Epplen, who has performed extensive research work in postmortem material, brought numerous specimens from King County Hospital. He emphasized the making of a correct and thorough diagnosis prior to surgery by the correlation of clinical history, x-ray examinations, symptoms, etc. He presented specimens and lectured about pathologic conditions to bring out a comparison between clinical preoperative and postmortem findings. He stressed especially the rather frequent findings of obscure ulcerations and malignant changes noted on autopsy and the importance of autopsies which are not performed often enough. A general discussion followed.

Dr. Coffey, gave a practical talk on "Abdominal Emergencies," emphasizing especially the study of symptoms and searching for the cause of disease before attempting surgery. In many cases an attempt is made at home to treat the condition by administration of laxatives before calling a competent physician or surgeon to diagnose the case. Laxatives cure nothing, but rest is one of the most important factors. He outlined the differential diagnosis of various causes for acute abdominal pain, giving special attention to acute appendicitis, acute pancreatitis, mesenteric thrombosis, strangulated hernia within abdomen, perforating ulcers, etc.

President Rooks stated that these two visiting physicians were responsible for making this the most successful and interesting meeting ever held by the society.

WHATCOM COUNTY MEDICAL SOCIETY

Pres., P. McCalla; Secty., O. E. Beebe

Whatcom County Medical Society held a meeting in the club room at Bellingham Dec. 3. Dr. F. J. VanKirk related his observations at the recent Boston meeting of the American College of Surgeons.

Officers of the society for the ensuing year were elected as follows: President, Dr. J. Reid Morrison, Bellingham; first vice-president, Dr. C. E. Beebe, Bellingham; second vice-president, Dr. E. C. Clark, Sumas; third vice-president, Dr. C. S. Hood, Ferndale; fourth vice-president, Dr. Marion LeCocq, Lynden; treasurer, Dr. S. S. Howe, Bellingham; secretary, Dr. Charles Teal, Bellingham. Drs. J. P. Bilodeau, L. A. Greenwood and J. M. Erb of Bellingham were selected as members of the board of censors.

WHITMAN COUNTY MEDICAL SOCIETY

Pres., J. D. Leuty; Secty., J. E. Preucel

Whitman County Medical Society held its fourth quarterly meeting at the St. Ignatius Hospital, Colfax., Dec. 4, 4 to 9 p. m., the president, Dr. J. D. Lenty, presiding. Dinner was served in the hospital dining room by the Sisters and nurses at 6:30 o'clock.

Besides other business matters disposed of, it was agreed to continue with the Public Health Educational Program and Radio Health Talks.

Walla Walla Valley Medical Society was represented by Drs. Ingram, Hollenbach, Roocks and Johannesson. Drs. Roocks, president, and Johannesson, secretary, gave interesting talks on county medical society affiliations. Both brought out some important points as to why adjoining societies should be better acquainted. Members of the Whitman County Society were heartily invited to attend the Walla Walla Valley Society medical meetings.

Under the scientific program Dr. Byron Henry gave a very interesting talk on his recent trip to Europe and some high points on European methods.

Dr. Edgar N. Layton gave instructive sketches of medical interest, of his recent postgraduate trip to the Mayo Clinic and other points.

The next regular meeting will be held at Colfax on April 9.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

Modern Medicine. Its Theory and Practice. In Original Contributions by American and Foreign Authors. Edited by Sir William Osler Bart, M.D., F.R.S. Third Edition, Thoroughly Revised and Reedited by Thomas McCrae, M.D., Professor of Medicine in the Jefferson Medical College, Philadelphia, Assisted by Elmer H. Funk, M.D., Clinical Professor of Medicine, Jefferson Medical College. Vol. VI. Diseases of the Nervous System, Diseases and Abnormalities of the Mind. Illustrated. Cloth, 964 pp. $9.00. Lea & Febiger, Philadelphia, 1928.

This is the last volume of the new edition of Modern Medicine. The authors of this volume include the leaders in neurology both here and in Great Britain, as Lewellys Barker, Edwin Bramwell, Joseph Collins, Harvey Cushing, Jelliffe, Sachs, Spiller and thirteen others of the same degree of celebrity. There is to be found an excellent article by J. Ramsay Hunt on epidemic encephalitis, in which he fails to discover any sufficient evidence of influenza being an etiologic factor in encephalitis and notes that it preceded influenza in the Vienna epigreatest importance. Hunt says that tuberculous and meningococcus meningitis, cerebral tumor and cerebral hemorrhage are the conditions with which it is most likely to be confused. It has seemed to the reviewer that tuberculous meningitis, poliomyelitis (cerebral forms), brain tumor and cerebrospinal syphilis are the diseases chiefly requiring differentiating from encephalitis. The author is not optimistic of any form of treatment, either in the acute stage or later Parkinsonian syndrome.

In the monograph of L. Pierce Clark on epilepsy no hope is offered of any special treatment of the disease, and the newer fashionable cures by ketogenic diet and by operative decompression procedure are not even mentioned.

The chapter by Cushing on intracranial tumors naturally possesses great interest. It is rather amusing though that, in speaking of the frequency of brain tumors, physicians who boast of never having seen one in the course of their careers merely exhibit their ignorance. Cushing cites the fact that, since the Peter Bent Brigham Hospital opened more than fourteen years ago, there have been observed about 1800 cerebral tumors. Since Cushing is the greatest lviing authority on brain tumor, perhaps it is not unnatural that patients should flock to his hospital above all others in the country. It would be interesting to know how many of these patients came from Boston, the site of the hospital. As Massachusetts has been defined "as a state of mind," one might expect frequency of its disorders. Cushing presents the subject with charming as well as masterful Iucidity. All who have read his Life of Sir William Osler will recognize his rare literary ability.

In respect to ventriculography Cushing warns us of its dangers and says that it should never be practiced by a surgeon unless he is prepared immediately to operate upon the patient if necessary. Also in regard to lumba rpuncture he feels that its possible informing evidence is not sufficient to warrant its employment in brain tumor. Again, under treatment, the use of roentgen rays may often be useful in some of the more malignant types of glioma and in pituitary adenomas, yet it is futile to radiate meningiomas, acoustic neromas or congenital tumors and the more highly differentiated gliomas, and no tumor should be radiated that has not been verified by operation. As elsewhere in the body, the roentgen rays may for a time appear to exert a favorable influence for a short time and then seem to stimulate the activity of the tumor's growth.

This system, known as Osler's Modern Medicine, is now complete in its new edition and has come to be accepted as one of the great standard classics of medicine. General Index is a separate book of 126 pages (price $1.00), including indices of the six volumes. Winslow.

Muscle Function. By Wilhelmine G. Wright, Boston. With Foreword by J. Playfair McMurrich, Professor of Toronto. 188 pp. $3.50. Paul B. Hoeber, Inc., New York, 1928.

The author of this book has been for over twenty years in charge of the gymnasium established by Dr. Robert W. Lovett for the treatment of orthopedic patients, particularly those requiring muscle training following spastic and infantile paralysis. In this capacity she was closely associated with that master mind, and to anyone who knew him this fact is sufficient guarantee of her exceptional ability. The extensive epidemics of poliomyelitis which occurred in New England during this period furnished abundant material for study, the character of much of the clientele making possible an exceptionally intelligent cooperation, and the keen personal interest and scientific guidance of her chief all combined to make a unique and most valuable foundation for this work.

There is a chapter dealing with general principles of muscle action, several featuring muscle function from the viewpoint of the motions produced, and one showing the part which each muscle separately plays in the production of a given movement. In the first section are discussed leverage, antagonistic muscle action, group innervation and muscle timing, referring to many of the existing concepts and showing how some have been confirmed, while others have failed of confirmation. The discussion is clear, and points are illustrated with many examples from cases in which paralysis of certain groups or single muscles of a group have permitted observation of muscle function, uncomplicated by the action of groups or muscles which normally alter it. The second and third sections are of great value both to those engaged in muscle training necessitated by some pathologic condition, and to those studying normal muscle function. In these sections definite methods are given for testing various muscles and examples cited to illustrate their use.

Throughout the entire book is maintained both a constructive and analytic attitude. Deductions are based on careful observation of voluntary muscle function in the human animal, not on motions produced by electric stimulation of certain muscles or muscle groups in the lower animals, nor upon theories as to what motions could be produced because of the origin and insertion of muscles as worked out in the dissecting room. As a result of this method of study conclusions at times vary from those which have been reached by many anatomists and physiologists, whose works are generally considered authoritative and fundamental. In such instances the author takes issue with these authorities, giving due consideration to their findings but stating hers clearly and in a manner which carries conviction to the mind of the reader. It is easy to predict that this book will find a permanent place, both as a working manual for the physiotherapist and as a reference book for the physiologist. Coe.

Syphilis. Acquired and Hereditary Syphilis. By Charles C. Dennie, B.S., M.D., Assistant Professor of Dermatology and Syphilology, University of Kansas School of Medicine, etc. 304 pp. $2.00. Harper & Brothers, New York and London, 1928.

As stated in the foreword, this volume is intended for a quick and handy reference and as such is a valuable addition. The work is clear, concise and exactly to the point, written in a free and easy manner without the confusion of theories usually the result of a number of references from the literature. The author briefly takes up the subject of diagnosis of syphilis of the various systems with a brief review of the pathology in general. The section devoted to therapy deals very clearly with the indications and counterindications in the various types of syphilis, not overlooking the procedure to be followed in the various complications arising from treatment.

The part dealing with neurosyphilis is admirably told, tracing its course from its inception in the primary stage to the terminal stage of the late disease with a clear idea of what is to be the procedure at the time and what treatment has ultimately to offer the individual. The volume was obviously intended for the general practitioner but is a valuable addition to any medical library, being in short a resume of the personal experiences of a man who is a careful observer of a large volume of clinical material. Parker.

The Elements of the Science of Nutrition. By Graham Lusk, Ph.D., Sc.D., LL.D., F.R.S. (Edin.) Professor of Physiology at the Cornell University Medical College, New York City. Fourth Edition, reset. Philadelphia and London. W. B. Saunders Company, 1928. Price $7.00.

Good business men are said to study the personnel responsible for management, when they are drawing conclusions in regard to the stability of an organization. If one approaches this book in a similar manner he returns with the joy of satisfaction as a stimulating impulse. Lusk is one of the American men who have made possible the recent ascendancy of American medicine. He has encouraged many in their efforts to progress, and this last edition is another monument in his life of honest effort and careful attention to minute detail. The book is intensely scientific and practical. The busy practitioner wishes at times to copy a stock diet and hand it to his patient. He has not been taught to calculate a diet for his patient's needs. He would like to go back to school for a month and learn how to do it, but his practice is pressing and he cannot get away. Here is his opportunity to get the fundamental, basic factors which it is necessary for him to have to intelligently go about the nutritive problems which appear in his patients. The first eight chapters will stimulate greatly those who have worked from the research standpoint, and the following twenty-three chapters are of intense practical interest to all practicing physicians. The practitioner should digest carefully the early chapters, and this will give a much better background for the material contained in the later ones. One can almost hold this book with biblical reverence, and it may be reviewed repeatedly with new information coming from its pages with each effort. Hofrichter.

Bronchial Asthma. Its Diagnosis and Treatment. By Harry L. Alexander, A.B., M.D., Associate Professor of Medicine in the Washington University Medical School, St. Louis, etc. Illustrated. 171 pp. $2.25. Lea & Febiger, Philadelphia, 1928.

In this volume the factors underlying the asthmatic paroxysm are discussed in dealing with the anatomic structures participating in an attack, also questions of etiology and the immunologic aspects of the disease. The distinction between anaphylaxis and allergy is explained and the details presented for obtaining skin reactions and the process of desensitization. The discovery that bronchial asthma is an expression of human hypersensitiveness is the basis of modern treatment for this disease. The successful alleviation of the asthmatic paroxysm is obtained chiefly by drugs, of which epinephrin is the main stay. The roll played by ephedrin and atropine is also considered. The most important aspect of this disease is prophylaxis, in which skin tests are a most important aid. Suggestions are offered for this line of investigation. A study of this book will aid one in the treatment of this very prevalent disease.

The Clinical Examination of the Nervous System. By G. H. Monrad Krohn, M.D., F.R.C.P. Professor of Medicine in the Royal Frederick University, Oslo, Norway, Physician-in-Chief to the Neurological Section of the State Hospital, Oslo, etc. With Foreword by T. Grainger Stewart, M.D., F.R.C.P. Fourth Edition. Cloth. 209 pp. $2.50. Paul B. Hoeber Inc., New York, 1928.

This is a splendid little handbook, embodying a systematic routine examination of psychiatric and especially neurologic patients. All the methods of examination of every part of the body involved in neurologic cases are described and explained and their diagnostic value discussed. The writer is insistent that psychiatry cannot be rightly divorced from neurology and that they must go hand in hand. Very simple and straightforward methods are given for testing the mental condition of patients. It is

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rather extraordinary that the author has not written this book in Norwegian but in English which is most clear and excellent. He has also the facility of many other languages and has studied in many countries. He advises that students complete first the whole systematic examination of the patients, without thought of the diagnosis, and then that the findings be written out in two parallel columns, corresponding to the right and left sides of the body. Then a focal diagnosis should be made, based on anatomic and physiologic knowledge and, finally, the nature of the lesion should be determined by knowledge of general pathology.

The usual method followed by most of us is to try and remember what type of disease some of the symptoms remind us of and then jump at the diagnosis because it looks like this, that or the other. The only trouble in following such a logical and essential routine is that most amateurs in neurology do not possess the requisite knowledge of nervous anatomy and physiology. This remark also applies to many so-called neurologists who have been trained chiefly in mental diseases in insane asylums.

There is a very sensible and practical chapter on the first routine examination of the neurologic or psychiatric patient. This little book can be highly recommended for its simplicity and completeness and reflects the mind of a man of unusual ability and uncommon sense, a mind that is not always associated with that of the neurologist in the belief of many medical men, particularly those who served in the Great War. WINSLOW.

ROENTGENOLOGY. Its Early History, Some Basic Physical Principles and the Protective Measures. By G. W. C. Kaye, O.B.E., M. A., D.Sc., F.Inst. P. With forty-nine illustrations. Cloth. 157 pp. $2.00. Paul B. Hoeber, Inc., New York. 1928.

This volume is of value chiefly to roentgenologists, hospitals and institutions planning on improving the safety measures in their present or contemplated laboratories. The first chapter deals with the historical aspect of roentgen ray. It is interesting how the work of succeeding physicists dovetail in, finally to climax in the production of a vacuum tube by Roentgen which produced the so-called x-rays. Several chapters are devoted to physics on x-radiation, dealing with the reflection, prismatic refraction and diffraction by ruled gratings. Much knowledge has been added to the physics of x-radiation within the last few years, and in this volume this phase is covered extensively.

The last half of the volume takes up the question of roentgen ray protection which is of marked importance to every roentgenologist and individuals working in the departments. In the two appendices are given in detail the reports and recommendations of the British X-Ray and Radium Protection Committee and also those adopted at the Second International Congress of Radiology in Stockholm in 1928. The contents of these should be known not only by specialists in radiology, but also by physicians who do only a small amount of x-ray work in their own practice. The volume deserves a worthy place in the library of all interested in x-ray work.

BAUMGARTEN.

SPASMOPHILIA. By Edward C. Wrightsman, M.D., former Clinical Assistant in Pediatrics, Northwestern University Medical School, Chicago. 155 pp. The Gorham Press, Boston. 1928.

This little volume furnishes a most delightful evening's reading. It is specially to be recommended to the general practitioner, for it is he who sees the greatest number of spasmophilia cases. The etiologic relation of rickets and spasmophilia is presented most understandingly and the clinical discussion could not be excelled. Perhaps rightly the author has refrained from lengthy discourse on blood chemistry and hydrogen-ion concentration. A careful reading of this book is recommended, for there is such wealth of bedside information both diagnostic and therapeutic. The clear cut classification descriptions leave the reader with an organized understanding of the mechanism of laryngospasm, eclampsia, tonic muscle spasms, bronchotetany and gastrotetany. The book is indeed worth while and should be read by all physicians who come into contact with children.

WADE.

PUBLIC HEALTH AND HYGIENE. Its Contributions by Eminent Authorities. Edited by William Hallock Park, M.D., Professor of Bacteriology and Hygiene, University of Bellevue Medical College, and Director of the Bureau of Laboratories of the Department of Health, New York City. Second Edition, Thoroughly Revised. Illustrated with 123 engravings. 902 pp. $9.00. Lea & Febiger, Philadelphia, 1928.

In no field of medical practice has there been greater developments in recent years than in that of public health. This subject is now taught in the medical schools, and every progressive state and large city has bureaus in their departments of health covering all the subdivisions pertaining to the manifold phases of health problems. There is no better book published than this, covering the questions arising in the public health work. Park writes the chapters dealing with microorganisms and their relations to various forms of pathology, infectious diseases of the respiratory and intestinal tracts, contagious diseases and those transmitted to man through animals, insects, meat and fish. Chapters on food are discussed by Sherman, while Provost has chapters on water supplies, sewage and municipal sanitation. This volume is expanded to include chapters on personal, military, industrial, child and mental hygiene, all written by different contributors. Mental defectives and their control is also discussed. Any subject in any way related to public health problems will be found in this volume, which is unexcelled in this line of study.

IN CARDIAC HYPERTROPHY. Experimental and clinical observations have led J. A. E. Eyster, Madison, Wis. (*Journal A. M. A.*, Dec. 15, 1928), to the conclusion that the most important factor leading to the cardiac hypertrophy that develops in organic cardiac or vascular disease is not increased work of the muscle per se but the muscle injury and the reaction to injury that result from abnormal stretching of the muscle in the initial period of overload as the lesion develops.

NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington, Idaho and Pacific Northwest Medical Association

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ORIGINAL CONTRIBUTIONS

RECENT ADVANCES IN PHARMACOLOGY*

CARL A. DRAGSTEDT, Ph.D. M.D.
CHICAGO, ILL.

This paper is essentially a report from the front line of activities in the sector in which pharmacologists are working. Its limitations should not be interpreted as due to meager progress but rather to lack of time to adequately survey the field. Perhaps the first question that should be discussed in such a review is whether or not we know any more about how drugs act to produce their effect than we did formerly.

THE MODE OF ACTION OF DRUGS

The processes of life are essentially conditioned on chemical and physical changes in the constituents of the cells. Foreign chemical substances may enter into these reactions, and thus modify them more or less profoundly, with corresponding changes of function. No physical or chemical force can lead to anything else being produced from a fertilized toad's egg but a toad, deformed or crippled it may be, nor can any drug confer on a living tissue-cell a capacity which is not inherent within it, active or latent.

Fundamentally, every pharmacologic action consists only in a quantitative change in the function of the cell. Some of the reactions by which the capacity of a cell may be weakened and paralyzed or aided and strengthened are comparatively simple, for example the reaction between oxalic acid and the calcium of the tissues, the combination of carbon monoxide with hemoglobin, or the osmotic phenomena produced by various salts. Other reactions, however, occur only in living tissues and are exceedingly difficult of analysis.

Various theories, such as changes in cell membranes, changes in surface tension, phenomena of colloid chemistry, etc., have been postulated to explain some of these obscure reactions. Beutner has recently advanced a theory applicable to the action of various alkaloids based on electric changes produced in living tissue. Nernst's theory of electric stimulation holds that the stimulation by an electric current is due to the change of salt concentration of a membrane or, in other words, to a change of preexisting potential differences in tissues.

Beutner found that various alkaloids (and in dilutions that parallel their toxicity) alter considerably the potential difference that exists at the junction between nitrobenzene with oleic acid and sodium chloride alkalinized by the addition of soap. His interpretation is given thus: "If the assumption is justified that potential differences resembling to some extent those of our artificial system are present in tissues, the addition of alkaloidal salts (and possibly other poisons) would primarily change the potential difference existing inside of living tissue. This change or polarization would be the cause of the stimulation produced by the toxic substance, just as polarization is the cause of the stimulation which a current causes, according to Nernst's theory. We may conclude, therefore, that when an animal collapses after a fatal dose of strychnine, atropine or other alkaloid, the cause of its death is a similar injury to its brain, as if it had been struck by lightning or electrocuted." This novel theory has several shortcomings, but it may be an important step in the clarification of this fundamental problem.

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Pituitary Extract. Kamm and his associates in the laboratories of Parke Davis and Company have recently reported the separation of pituitary extract into two fractions, one having the characteristic effect on the blood pressure, the other on the uterus. This is a noteworthy achievement and the possibility of establishing the chemical nature and possible synthesis of these hormones seems less remote. The recent synthesis of thyroxin gives support to such a hope. It seems possible that this separation and purification may extend their field of usefulness in medicine. Recent experiments show that it is the blood pressure raising fraction that has the characteristic effect on the kidney, of which clinical use is made in the treatment of diabetes insipidus.

Hypnotics in Cocaine Intoxication. In a study of acute cocaine poisoning in laboratory animals, Tatum found barbital an effective agent in controlling the convulsions. This work has been extended with the finding that practically all of the hypnotics of the barbituric acid derivatives are similarly effective in the intoxication of cocaine and the synthetic local anesthetics. Various workers have reported beneficial effects in clinical cases, using the hypnotic either as a prophylactic prior to operation or to control symptoms when they appear.

Cardiazol, Homocamfin, and Alpha-lobeline. These three relatively new, so-called cardiovascular and respiratory stimulants, have come into some use as a result of wide publicity and what appear to be exaggerated claims on the part of various European clinics. The recent pharmacologic studies of Camp, Norris and Weiss, and others do not warrant the claims for their beneficial effects and indicate that their use is not without some degree of danger. It is, perhaps, too early to pass final judgment upon them as medicinal agents and it may be that well controlled studies may justify a more restricted use than this advertising recommends.

Ephedrine. Attention should be called to ephedrine in a paper of this kind, as it is a good example of a valuable therapeutic agent coming into use not as the result of discovery of a new drug but as a result of becoming better acquainted with one that has long been known. The crude drug has been used by the Chinese for centuries and the alkaloid was isolated by Negai as long ago as 1887. Renewed interest in its study is largely due to Chen and his coworkers. Its pharmacologic effects are qualitatively similar to those of epinephrine in many respects. It produces a rise in blood pressure, dilation of the pupil, shrinking of mucous membranes and relaxation of smooth muscle. It differs pharmacologically from epinephrine in that it has relatively little effect on blood sugar, shows no synergism with cocaine and no reversal of action after ergotoxine. It has several advantages over epinephrine in that it is very much more stable, is effective on oral administration, and its effects are very much more prolonged. It appears to have a very definite field of usefulness in asthma and hay fever, as a mydriatic in certain instances of hypotension, and to produce shrinking and blanching of mucous membranes.

The Xanthine Diuretics in Angina Pectoris. It has been known for some time that the various members of the xanthine group act on the heart and blood vessels, peripherally and centrally. The predominant action of therapeutic and moderate dosage consists in vasodilation, combined with sufficient cardiac stimulation to maintain the blood pressure, or even to raise it somewhat. As a part of this general effect the coronary flow is increased. Fenn and Gilbert at Northwestern, and Smith and Miller at Iowa have recently examined the coronary effects more closely. They found increased coronary flow of 60 per cent with theophylline, and considerably less with theobromine and caffeine. This increased flow was largely due to vasodilation and not to increased cardiac output. Similarly the therapeutic results of theophylline sodium acetate in cases of angina pectoris were very encouraging.

Digitalis. A new interpretation of the mode of action of digitalis has been suggested by the work of Harrison and Leonard. In experiments on normal unanesthetized dogs they find that digitalis in therapeutic dosage definitely decreases the cardiac output. This was determined from the rate of oxygen consumption and the difference in oxygen content of the venous and arterial blood. This is in direct contradiction to the views heretofore held by both pharmacologists and clinicians, and will doubtless soon be followed by work from other laboratories. They hold that digitalis may be considered as affecting the circulation in the same way as morphine affects the respiration. They feel that "the evidence that digitalis decreases the work of the dog's heart is conclusive and by analogy to morphine the evidence that the drug decreases the work of the diseased human heart becomes very suggestive." This is an exceedingly important question to determine in man because, as they have pointed out, the rational use of digitalis in such conditions as pneumonia, especially, may depend on just such information.

PHYTOPHARMACOLOGY

An interesting field of study has been developed in the past few years, particularly by Macht and his coworkers, in the effect of drugs and poisons upon various types of plant life. It may be recalled that the investigation by Luckhardt of the anesthetic properties of ethylene was prompted by the previous work of botanists in their study of the effect of this gas on flowers and plants. Until recently, however, relatively little attention has been paid to a study of the actions of drugs upon plant protoplasm, aside from the various chemicals which are necessary to plant nutrition and to which the plant is exposed in its various environments.

By the development of a technic in which the effect of various agents upon the growth of certain types of seedlings is observed, quantitative data may be obtained. It appeared early in such a study that plant protoplasm may be extraordinarily sensitive to some drugs or chemicals as compared with animal protoplasm, while with others (notably cocaine) it is extraordinarily more resistant. Using such a method, Macht claims to have demonstrated the existence of a toxin in the blood of women during menstruation and in the blood of all patients with pernicious anemia. He also indicates that this method may prove useful in the standardization of certain drugs which otherwise require more tedious and expensive biologic methods. His findings with regard to pernicious anemia have been called in question by Isaacs and his colleagues at the University of Michigan. Further study is, therefor, required to properly evaluate this method as a diagnostic procedure in pernicious anemia. It is possible, however, that methods for the detection of certain poisons, for the standardization of certain drugs, or for the diagnosis of various diseases may result from a comprehensive study of this field of phytopharmacology, as Macht terms it.

DRUG TOLERANCE

An exceedingly interesting question to the pharmacologist and not much less so to the physician is the problem of congenital and acquired tolerance to drugs. Since the days of Mithridates and the antidotum mithridaticum and theriac, considerable attention has been directed to this mysterious question. With the advent of bacteriology as a science and of its offspring immunology, a great deal has been learned with regard to the nature of body defense mechanisms.

It is now well known that, when acquired immunity is induced in warm-blooded animals to toxins, bacteria or indeed any protein substance, this immunity is accompanied by, and at least partly due to, the formation of specific antibodies in the blood or tissue fluids. The hope was engendered that similar mechanisms might explain the development of tolerance to chemicals and drugs. No such antibodies have been found, however, and we are left with several rather unsatisfactory explanations, such as decreased absorption, increased ability to destroy or excrete the drug by various organs, or an actual altered cellular susceptibility.

There have been several contributions to this field in recent years, perhaps the most interesting of which to this audience are the studies of morphine. It has long been recognized that the pharmacologic effect of morphine is a mixture of stimulation and depression. Thus, the pupillary constriction, vagal slowing of the heart and intestinal response are evidences of stimulation, and the narcosis and respiratory effect evidences of depression. Van Egmond, Plant, Tatum and others have shown quite definitely that, as experimental animals are made tolerant by continued administration, no tolerance is manifest in the reactions to the stimulant effects, whereas a high degree of tolerance develops to the depressant effects. This indicates that morphine is not either expeditiously destroyed, neutralized or excreted. Similarly, Tatum points out that it is only rarely an experimental animal dies in depression from relatively small doses, but it is much more common for them to die in excitement and convulsions after relatively large doses. He also says that so-called "tolerant animals" succumb just as readily to a surely fatal dose as control animals. The development of tolerance in man, in whom death by depression occurs from relatively small doses and before excitement appears, is thus not so out of harmony with the case of the experimental animal as appears at first glance.

CHEMOTHERAPY

The term chemotherapy in its more restricted sense is employed to designate that branch of pharmacologic investigation which deals with the discovery of chemical agents which act specifically on the causative agents of infectious diseases. It implied, according to Ehrlich, a systematic search for chemical substances with a strong affinity for parasites, and a weak or no affinity for the cells of the host. A great number of substances were synthesized by Ehrlich and his coworkers and others in the search for effective agents, and the results in trypanosomal and spirochaetal infections have been of the greatest value.

The results in bacterial infections were discouraging and Van Behring was led to conclude: "It can be regarded almost as a law that the tissue cells of man and animal are many times more susceptible to the poisonous effects of disinfectants than any bacteria known at present. Therefor, before the antiseptic has a chance to kill or to inhibit the growth of the bacteria in the blood or in the organs of the body, the infected animal itself will be killed. The pessimism of him who declared that disinfection in the living body is for all time impossible appears to be only too justified." A closer analysis, however, of the instances in which chemotherapy was successful disclosed reasons for a less hopeless attitude.

Dale has pointed out that "in the action of almost every remedy which has proved of value in the specific cure of infection, there are features which cannot be interpreted by a strict application of Ehrlich's distribution hypothesis. The discrepancies begin to show a new congruity among themselves, the conception of a remedy, not killing the parasite immediately but modifying their virulence, or lowering their resistance to the body's natural defenses; of a remedy not acting as such, but in virtue of the formation from it in the body of some directly toxic product, either by a modification of its structures or by its union with some tissues constituent; of an affinity of the remedy for certain cells of the host's body, leading to the formation of a depot from which, in long persistent, never dangerous concentration, the curative substance is slowly released; all these conceptions present themselves again and again as necessary for the rationalization of the effects observed." In 1923 Dale stated that the chemotherapy of infection by the true bacteria could not be said to have achieved anything of really practical importance. He was excluding the local or topical treatments of infected areas with antiseptics.

Since this time, while disappointments have been numerous, there have been results enough at least to warrant a certain amount of optimism and to encourage continued search. The improvements in the methods of using chaulmoogra oil in leprosy, the addition to our repertoire of urinary antiseptics in hexylresorcinol are cases in point, even if we are perhaps overskeptical about the reported virtues of the dyes and complex mercurials in the treatment of septicemias. Kolmer, whose book has been of such great service to this subject, maintains a distinctly optimistic attitude.

PHARMACOLOGY AND PHYSIOLOGY METHODS

I think it proper to conclude with a brief discussion of some of the recent advances in experimental methods. This is a field of progress of particular interest because it is not possible to conjecture all that may be learned, as the methods are more extensively employed. The rapid progress in our knowledge of the physiology and pharmacology of the gastrointestinal tract that followed the development of methods, such as the Pawlow pouch, Thiry fistula, stomach tube, balloon recording, x-ray visualization, etc., may be recalled in this connection. The noteworthy feature of these methods is that they permit of analysis of functional states and reactions in the absence of anesthesia.

Fick and Marshall and others have developed methods of studying the cardiac output in unanesthetized animals. We have made use of the method of transplanting or rather dislocating the carotid externally to the skin so that direct sphygmomanometry in the absence of anesthesia is possible. Barcroft and Stephens and others have displaced the spleen extraabdominally so that its changes in size and contour may be recorded. Findings of significance in an interpretation of the function of the spleen have resulted from this method. It is also an exceedingly delicate method of noting the response to epinephrine. Cholecystography is a relatively new method familiar now to all. The use of iodized oil in the uterus as a means of watching the effects of drugs on the normal or pregnant organ in situ and in the absence of anesthetics is now being investigated by various workers.

The production of experimental Siamese twins has been used to amplify other methods of study by L. R. Dragstedt and others. Artificial production of exstrophy of the bladder is an advantageous method of accurately studying the urinary secretion in response to various diuretics. London of the University of Leningrad has introduced methods, whereby blood may be withdrawn from or drugs injected into various inaccessible blood vessels, such as the portal vein, hepatic vein, suprarenal vein, etc., in unanesthetized animals. He anchors a suitable sheath with a portion of omentum and allows one end of the sheath to protrude through the body wall. This enables him at a later date to insert a needle through the sheath directly into the vessel for any purpose desired.

It is not an uncommon criticism that the pharmacologist spends his time studying the effect of poisonous doses of drugs on normal but anesthetized animals, and that his interpretation of the action of therapeutic doses of drugs on sick but unanesthetized humans may be correspondingly faulty. Perhaps this resume may indicate that he is at least conscious of the error of his ways.

FRACTURES OF BOTH BONES OF THE LEG. Since fractures must and will continue to be treated by many men not qualified either by training or by surroundings to use the more elaborate methods, James Morley Hitzrot, New York (*Journal A. M. A.*, Jan. 26, 1929), says it has been his custom to divide fractures into four general groups (adapted in this paper to fractures of both bones of the leg): 1. Fractures which with any suitable treatment will give a satisfactory result. Among these are the fractures with little or no displacement, fractures with minor displacements and angular deformities easily corrected by simple manipulations, and the subperiosteal and spiral fractures in young children. 2. Fractures which require special treatment for the desired result. These require special methods and considerable skill in maintaining the reduction by whatever method employed. They include the spiral fractures, the marked displacements and the simpler forms of compound fracture, especially those by indirect violence. 3. Complicated fractures which require special treatment to get the best possible result, and which may give an indifferent result even with the best treatment. This group and the second group overlap, but he would include here the comminuted fractures, the bad spiral fractures and most of the compound fractures. All these require training and judgment and are not easy to handle. 4. Fractures in which the prognosis will be poor even with the best treatment. Here he would group the bad compound injuries by direct violence, fractures with large loose fragments, fractures in debilitated and elderly persons, and fractures with nerve and vascular injuries. The author believes that every man can and should know how to handle the first group, and to recognize readily the fractures which fall into the other three groups and for these three groups he should be trained "to splint 'em where they lie" (Darrach) in the axis of the limb, to avoid unnecessary examinations and manipulations and to transport them properly splinted to a place where special treatment can be carried out.

THE MANAGEMENT OF STERILITY

AN ANALYSIS OF SIXTY-SEVEN CASES IN PRIVATE PRACTICE *

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No phase of the subject of sterility has been untouched in the literature. There should, however, always be room for further analyses of carefully kept records, and for suggestions drawn from a painstaking study of a considerable group of cases.

The material for this paper has been gathered from the records of sixty-seven married women who have presented themselves as office patients with the complaint of sterility. We have analyzed our records with no attempt to prove or disprove any preconceived notions, nor do we suppose that the study of so small a group of cases can be in its analysis more than suggestive. We are not attempting to establish dicta, but simply wish to present for what it is worth our conception of the outcome of the study and treatment of a group of sterility cases in private practice. With no attempt at completeness, we will touch on certain important points on which we hope our experiences may prove helpful.

The diagnosis of sterility has been found justified in every case, with the possible reservation that the time elapsed has not always been sufficient to meet the minimum of certain authorities in the definition of the term sterility (four cases under two years). We do not eliminate these for the reason that they constitute a certain percentage of the usual private practice in this specialty. It is our intention to indicate what may be expected from the conscientious treatment of a complete group of this sort rather than from the stereotyped and more easily controlled practice of the sterility clinics. On the other hand, we have not included instances in which some simple suggestion, such as an alkaline instillation, high or low ejaculation, etc., has relieved the condition.

We accept Polak's conception of sterility as absolute and relative, with relative sterility comprised of primary and secondary types. The absolute group shows anomalies which obviously cannot be overcome by treatment. Under relative sterility, the primary type is that in which no pregnancy has occurred, and the secondary that in which pregnancy has been followed by a prolonged period of inability

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GROUP STATISTICS

Table I.
Age.

	No. Cases	Oldest	Youngest	Average Age
Absolute	8			
Relative Primary	50	41	18	28.1
Relative Secondary	17	40	22	30.8
Group	67	41	18	29.4

Table II.
Duration of Sterility.

	No. Cases	Longest Duration	Shortest Duration	Average Duration
Relative Primary	50	20	1	5.2
Relative Secondary	17	12	7	4.5
Group	67	20	1	4.8

to conceive. Of sixty-seven patients studied, three were shown in the course of examination to have tubes occluded at the cornual ends. The condition of the semen of five husbands precluded the possibility of pregnancy. Thus, we are actually dealing with only fifty-nine cases of infertility potential for gynecologic treatment.

Results in the entire group: The gross statistics for the series will be noted in Tables I to V inclusive and Table X. The women were practically all of a relatively high social and economic status. There were forty-two primary and seventeen secondary cases of relative sterility. The average age for the series was 29.4 years, the secondary group averaging slightly over a year older than the primary. The oldest was 41 and the youngest 18. There were no successes in the age group over 35 (eight patients). The average age in the successful cases was 27. The average duration of the sterility was about five years in both primary and secondary groups. The longest duration of a sterility which was relieved was ten years.

The percentage incidence of pregnancy in the fifty-nine cases of relative sterility (infertility) was 42 per cent (Table III). This percentage was slightly higher in the forty-two primary than in the seventeen secondary sterilities. This figure embraces all of the cases in which there was the remotest chance of pregnancy, and does not exclude those who have lapsed or refused certain phases of our advice and treatment. It substantiates our theory that as good results may be had in this sort of group as in clinic practice.

Table III.
Successes.

	No. Cases	No. Pregnancies	Percent Success	No. Not Pregnant	Percent Failure
Relative Primary	42	18	43	24	57
Relative Secondary	17	7	41	10	59
Group	59	25	42	34	58

	Table IV. Cooperated			Table V. Did not cooperate.		
	No Cases	No. Pregnant	Percent Success	No. Cases	No. Pregnant	Percent Success
Relative Primary	18	15	83	22	2	9
Relative Secondary	14	8	57	5	0	0
Group	32	23	71	27	2	7

We have rearranged the cases, regardless of outcome, under the headings: "Complete examination and treatment" and "incomplete examination and treatment" which would correspond roughly to those who cooperated and those who did not. We find 71 per cent of successes in the cooperative group as opposed to 7 per cent in the noncooperative. These figures constitute a clear indication of the value of cooperation on the part of the patient. They have been helpful in convincing other patients of the necessity of carrying out our instructions. In this latter group are the few successes which we have had in fairness to assign rather to chance than to any given therapeusis.

We have been able to improve our records by the use of a printed form (figs. 1 and 2). This has been devised to assure our making a complete report in every case, and we find that it serves admirably as a detailed questionnaire. A faithful adherence to some such formulation of the data at hand is almost an essential to the successful conduct of sterility cases in private practice. Moreover, the scientific value of the record is greatly enhanced.

A detailed discussion of this record form would entail a consideration of almost the complete subject matter on sterility, and cannot be undertaken here. Certain points, however, may require elucidation, and furnish a pretext for suggestions which we have found helpful. For example, in regard to the use of contraceptives, it is important not only to know how long they have been employed, but also how long they have been discarded, and whether

HISTORY

Duration of Sterility Duration of Marriage Duration of Former Marriage
Primary or Secondary Former Pregnancy
Contraceptives When? How Long
Type? When Discontinued?
Desired Pregnancy Since Frequency of Intercourse
Miscl.

WIFE:
Age Occupation
Social Status
Former Marriage Preg.

Desires Children
Coitus:

Mental Att.
Satisfaction
Vaginisms Dysmenorrhea
Distaste Frigidity
Orgasm

Masturbation
Homosex. tend.
X-ray Exposure
Radium Treatment

Previous Diseases:
Mumps Age Type
Gonorrhea: Date: From To
  Irritation Urin. Symptoms
  Discharge
  Pelvic Pain Tenderness
  Bartolin Gl. etc.
Thyroid Hypo Hyper
Syphilis Date
Other Diseases

Operations: Tubes
  Ovaries Uterus

Known Retroversion
Menses: Began
  Interval Regularity
  No. Days Amt. Flow
  Character Flow
  Pains Since Cause of
  Onset Type: Dull
  Cramping
  Worse on Day of Period
NOTE:

HUSBAND:
Age Occupation
Social Status
Former Marriage Children

Desires Children
Coitus:

Mental Att.
Satisfaction
Distate Erection
Ejaculation Early Late
  Region of
Mechanical Difficulty
Withdrawal
Masturbation
Homosex. tend.
X-ray Exposure
Radium Treatment

Previous Diseases:
Mumps Age Type
Gonorrhea: Exposure
  Discharge Irritation
  Pain Ing. Glands
  Date: From To

Thyroid Hypo Hyper
Syphilis Date
Other Diseases

Orchitis Prostatitis
Hernia Hydrocele
Varicocele Undescended Testicle

Circumcision

NOTE:

(NOTE: Attach report of consultation by urologist.)

Fig. 1. Facsimile of history form for special sterility case record (Mathieu and Schauffler).

EXAMINATION

General: (Complete routine Ex.)
(Note especially adipose dystrophy, masculin habitus, hirsute tendency, thyroid anomaly, acromegalic tend., etc.)

Genitalia: Vaginismus
Pubic Hair Type
Dev. of Labia
Funnel Pelvis
Hymen Type Rupt.
Senile Change Fibrosis
Introitus
Vagina Sensitive
Depth Redundancy
Clitoris
Cervix: Axis Discharge
Tears
Cysts Erosion
Endocervicitis
Angulation Stenosis

Fundus: Size Shape
Consistency Tenderness
Motility Position
Attachments Tumors
Adnexae: Tubes

Ovaries:
Congestion Prolapse

NOTE:

Complete record of treatment to be recorded in progress record.

SPERM: Condom spec. *Date
Time Taken M. Time Exam. M.
Gross Amt. Consistency
Color Odor
Microscopic: No. Sperm, Loaded
Mod. No. Few None
Size Shape
Length Tails Motility
Motility Retained**
Pus Blood
Crystals Bacteria

Stained Smear: Morphology:

Bacteria Cells:

Vaginal Spec.: Time of Coitus M.
Time Examined M. No. Sperm
Motility Motility Retained**
Reaction Gross Characters

Cervical Spec.: Time of Coitus
M. Time Examined M.
No. Sperm Motility
Motility Retained**
Reaction Gross Characters

Tubal Insufflation: Date
Menstrual Phase
Sounds Passed? Cannula
Easily Inserted? Cervical Angulation
Gas Through: Early Late
At mm. Hg. Freely? Slowly?
Amt. Gas: Large? Small?
Stethoscope Test Shoulder Pain, Early Late
Mild Severe Other Sequellae
Benzyl, Benzoate, Atropine, etc.

Lipiodol Examination:
Date Hour M.
Antispasmodic Mens. Phase
Tension Required Amt. Lip
Complication
NOTE:

*Reports of subsequent tests to be attached to progress record.
**At room temperature.

Fig. 2. Facsimile of physical and special examination form for special sterility case record (Mathieu and Schauffler).

the past use of such methods might be a present factor in the sterility. Douches, suppositories, etc. may have affected the mucous membranes or secretions of cervix or vagina unfavorably. Even the use of condom or tent pessary may determine a so-called "habitual" inaptitude toward conception which may persist after its discontinuance. Withdrawal or other forms of coitus interruptus not infrequently determine a relative sterility, due to certain types of "impotentia." The button or stem pessary is a notorious cause of chronic endocervicitis, and so forth.

A statement in regard to the frequency of intercourse will rarely be volunteered, yet it is important, if only to give the mere mathematical probabilities. Sterility is frequently due to impotence consequent upon too frequent intercourse, and on the other hand, very infrequent indulgence will automatically reduce the probability of pregnancy.

Certain points which are brought up in such a questionnaire may seem wide of the mark in a given instance. We must remember, however, that every contingency must be covered for every case. For example, it may not seem important in an individual instance to record the patient's social status. In analyzing a group of cases, however, at some later date, such information will be of definite practical as well as academic value. Again, it may seem superfluous and even embarrassing at times to attempt to record the emotional and psychic reactions to intercourse. It is possible even that our treatment will be in no way affected by such data. The fact remains that only by detailed questioning and with the patient's entire confidence can we hope to arrive finally at a complete comprehension of the problem in all its phases.

In working up a record with such a form, it is not intended that it be laid on the desk, and the questions asked by rote. Nothing more artificial or embarrassing could be imagined. By degrees, however, and for the most part on the patient's own initiative, the various questions can be gone over, simply by the use of mild suggestion. A too formal attitutde or the atmosphere of hurry will surely impede progress. To gain an insight into the actualities of such problems may require the utmost in patience and understanding sympathy on the part of the specialist.

Often knowledge will be imparted by a husband or wife, which, if carelessly displayed before the other member, may be the cause of untold misfortune. Yet it may be necessary to transmit in some guise knowledge of this sort. For example, a husband is careless or brutal in the performance of the sexual act with resultant physical and psychic antagonism in his partner; or the sexual effort on the part of the husband may be inadequate, due simply to lack of knowledge of his partner's normal mechanism of reaction. Such faults may perhaps be easily corrected, but it will require the maximum of tact and discretion to arrange this without embarrassment or wounded feelings.

The question of what to tell a wife whose husband is the victim of venereal disease (and vice versa) often arises. To tell a woman flatly that her husband is impotent is again perhaps a dangerous procedure from the standpoint of her resultant psychic reaction. There are a thousand and one questions which may arise which will require the utmost in wisdom and tact from the physician. We believe that only by constant exercise in problems of this type can a physician become trained to handle them adequately. It is only a further argument in favor of the creation of the field of sterility as a limited specialty. The problems, both psychic and technical, require an intensive study and a vast experience as well as a natural aptitude for their proper solution. The field of sterility, which even at the present day is not infrequently invaded by the charlatan, should certainly be elevated to the level of a restricted specialty.

In glancing through the suggestions in regard to the history, one will note reference to the question of x-ray exposure. The sterilizing effect of large or prolonged doses of x-ray or radium is well known, and technicians as well as those who have had radiotherapy are apt to be affected. We wish to call attention also to the recent successful use of small so-called stimulating doses, which apparently have overcome certain types of sterility and menstrual disturbance, dependent upon ovarian dysfunction. Recent reports on this work are sufficiently favorable to merit serious attention.

General conditions, such as debility and organic or blood disease, will scarcely be overlooked. However, special attention may well be focused on the internal secretory glandular system. The thyroid especially is of interest, as its function is so closely associated with that of the ovary. Sterility is known to occur frequently as the result of either hyper- or hyposecretion. With the present day exact methods of diagnosis, this type of pathology should not be overlooked.

In the physical examination certain of the suggested notations may also seem to be rather of an academic nature. Such data, however, will be found of value in later classification and record analysis. The masculine type may be indicated by such findings as the arrangement of the pubic hair, underdeveloped labiæ or a funnel pelvis, etc. Occasionally it will be noted that the hymen or perineum is of such a sort that actual intercourse has been impossible. Such a condition not infrequently comes to our attention and may not be understood by either the wife or husband. An apparent cause of sterility which has been noted by us in three instances has not, to our knowledge, been given careful consideration in the literature. This is the deep and very redundant vagina. During the examination for the complaint of sterility it will be noted that the ordinary speculum will not serve to expose the cervix. Indeed, even the giant speculum will seem scarcely to unfold the redundant wall of such a deep vagina. Apparently such a condition is occasionally a cause of sterility, especially in conjunction with an inadequate male organ. Here we would find a quite definite indication for artificial insemination.

A description of the clitoris may seem unessential. In the course of a careful examination of this organ, however, we occasionally find a phimosis or dense preputial adhesions. The correction of such a condition, while not bearing directly on the problem of the sterility, may have a psychic effect which will influence favorably the patient's sexual physiology.

Our interest in the study of the semen in these cases was stimulated by the work of Williams and Savage, and later by Moensch. For some time past we have not only carefully studied the condom specimen, but also postcoital specimens of both vaginal and cervical material containing sperm (Huhner test). Finding the fresh preparations unsuitable for studies of the morphology of the sperm, we have made routine special stains of all of these preparations by the technic of Williams. These stains give a clear differential color between the heads and tails, but allow only rather an inaccurate study of the internal structure. Differences in size and shape, gross variations in morphology and a rough estimate of the relative number of sperm may be noted.

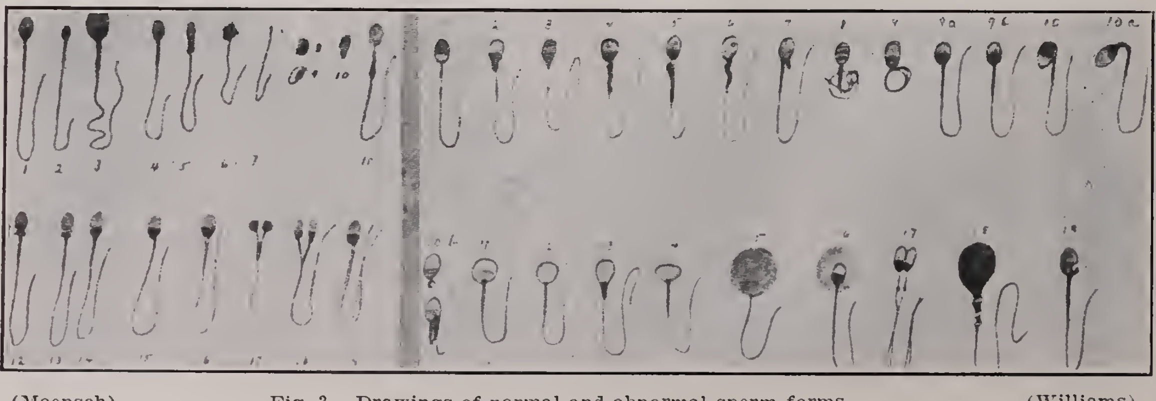
Epithelial cells and bacteria stain fairly well by this method, but pus shows well only when it is protected in a group of epithelial cells, mucus or other debris. Blood cells are destroyed by the method, as are most of the spermin crystals. These points were determined by using both methods on identical preparations and by special stains of pus, blood, epithelial cells, etc. (Table VI).

TABLE VI.

	Fresh Unstained Preparation	Fixed Stained Preparation
Numbers	Best index	Fair index
Motility	Best	No good
Morphology	Fair	Best
Spermin Crystals	Best	No good
Epi. cells	Fair	Best
Pus cells	Fair	No good
Blood cells	Good	No good
Mucus	Good	No good
Bacteria	Poor	Good

Table showing comparative value of fresh unstained preparations and fixed stained preparations of semen.

We are reproducing a plate showing some of the abnormalities of the sperm, as sketched by Moensch (fig. 3), as well as several microphotographs of our own preparations (figs. 4, 5 and 6). In observing these slides it is well to remember that, while certain important points are thus brought out, still the older method of the unstained fresh specimen is more reliable in certain departments. The fresh specimen will give the best index of relative numbers, motility and gross consistency, as well as the amount of pus, blood cells and the character of the spermin crystals. Information may



(Moensch) Fig. 3. Drawings of normal and abnormal sperm forms. (Williams)

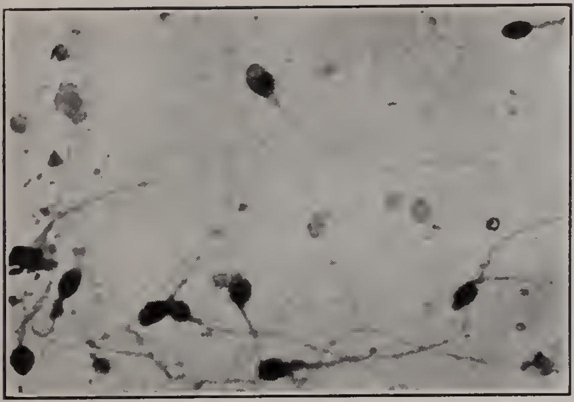


Fig. 4. Microphotogram of stained spermatozoa from vaginal material, taken one-half hour postcoitum. Essentially normal types.

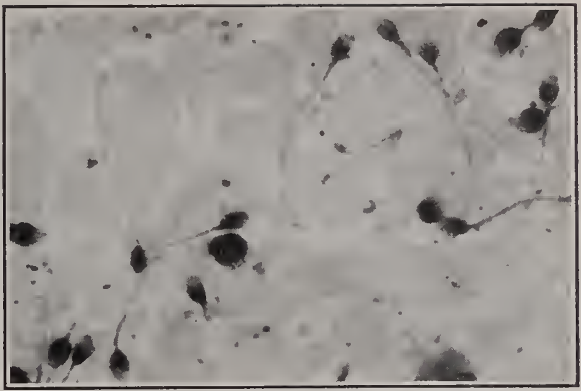


Fig. 5. Microphotogram of stained spermatozoa from cervical secretion taken one hour postcoitum. Note bacteria and epithelial cells. Normal morphology.

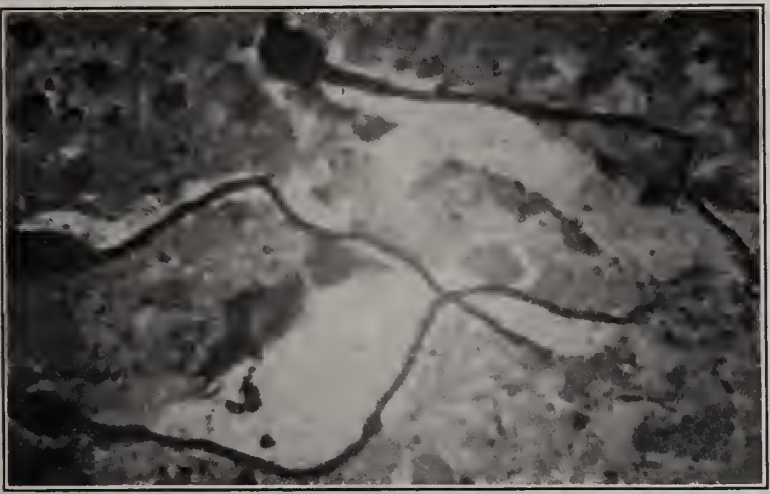


Fig. 6. High power of normal spermatozoa. The actual morphology is clearer under the lense than in the reproduction, but it is not entirely satisfactory at best.

be gathered from either method which we cannot afford to neglect and, therefore, it behooves us to do both.

It is important to remember that studies of the condom specimen alone will not answer all the questions in regard to the semen. We are able with safety to go farther and determine the effect of both the vaginal and cervical secretions, and also to study the condition of the sperm at least as high as the internal os. This is done by having the patient report immediately following intercourse, at which time the vaginal and cervical secretions are secured and studied (fig. 7). Further samples are taken at stated intervals and similar studies made, and in this way it can be determined when and in what condition the sperm arrives at the internal os.

In cases where the fault can be placed in the region of the vagina and cervix, even if the harmful influence cannot be definitely isolated, the indication will be clear for artificial insemination. Also data may be forthcoming which will indicate the proper channel of attack. For instance, if the sperm appear to exist normally in the vagina, but are found dead at all times in the cervical secretion, we natur-

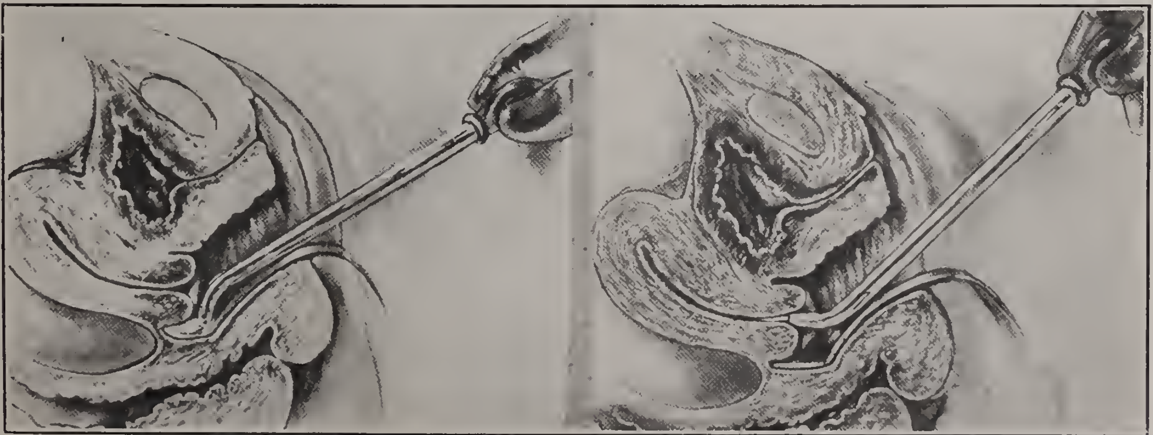


Fig. 7. Technic of procuring material for Huhner test of spermatozoa in the vagina and cervix (Dickinson).

TABLE VII.

Results of Rubin test.

	No. Cases	Percent Rubin Tested Cases	Percent Selected Group
Number patients tested	50	100	85
Number patients Rubin +	44	88	75
Number patients Rubin —	6	12	10
Pregnancy due to Rubin	5	10	8
Pregnancy due to Rubin plus other treatment	1	2	15
Pregnancy due to other treatment plus Rubin	6	12	10

TABLE VIII.

Success of the Rubin test in patients having one, two and three tests respectively.

No. Tests	No. Cases	No. Pregnant	Percent Success
1	36	1	2.7
2	6	1	17
3	8	3	38

TABLE IX.

Table showing apparent relation between sequence of results of three Rubin tests and subsequent pregnancy.

No. Cases	1st Rubin	2nd Rubin	3rd Rubin	Preg. due to Method	Percent Success
4	—	—	+	3	75
3	+	+	+	0	0
1	—	+	+	0	0

TABLE X.

Results in group having linear cauterization of the cervix.

	No. Cases	Percent Cauterized Group	Percent Entire Sel. Group
Total No. treated	31		
No. suitable for statistics	24	100	46
Pregnancy due to cautery alone	8	33	13
Pregnancy due to cautery plus other treatment	3	12	5
Pregnancy due to other treatment plus cautery	4	17	6
Failures	10	42	17

TABLE XI.

Results from the correction of retroversion of the uterus.

No. cases of retroversion	13
No. satisfactorily corrected	7
Pregnancy in corrected cases	5
Pregnancy in corrected cases due to correction	2
Pregnancy in uncorrected cases	4
Percent success in corrected cases	30 (71)
Percent success in uncorrected cases	66

NOTE: Operation was not used for correction in any case.

TABLE XII.

Comparison of number successes due to various methods.

	Rubin Test	Repl. of Retrov.	Cautery	Cause Not Assigned
Relative primary	4	2	8	5
Relative secondary	1	0	3	2
Total	5	2	11	7
Percent group	20	8	44	28

ally think of the latter as the harmful factor. These are only a few of the important points which may be elicited by conscientious study in this single phase of the problem of sterility.

In studying these records we have been impressed with the outstanding importance of certain procedures used in the management of various apparent causes of sterility. We will discuss briefly our results with (1) the Rubin test, (2) lipiodal visualization, (3) the conservative treatment of pelvic infections, (4) linear cautery, (5) correction of retroversion.

Therapeutic value of Rubin test. The diagnostic value of this test has been established beyond dispute. We hoped in studying these records to be able to add to the evidence for or against its value in assisting the occurrence of pregnancy. Our cases are obviously too few to be conclusive, but added to existing reports should be of value.

In this series the Rubin test has been used 71 times on 50 patients (Tables VII to IX). It was positive in 51 and negative in 20 instances, 41 patients proving Rubin-positive and 6 Rubin-negative. There were 7 successes which might have been ascribed to the method, but it was thought that the favorable result was probably due to treatment of the endocervix in 2 of these.

Five pregnancies were thought clearly due to the test, since in two (three and six year cases of primary sterility) the pregnancy followed the third and only positive test almost immediately, the first two tests having been negative, and in a third, showing the same sequence of result (neg., neg., pos.) there was no other therapeusis used. This was a primary sterility of two and a half years duration, in which cautery had been used to clear up an endocervicitis. But the interval of many months which elapsed between this treatment and the successful result, during which time the tubes were

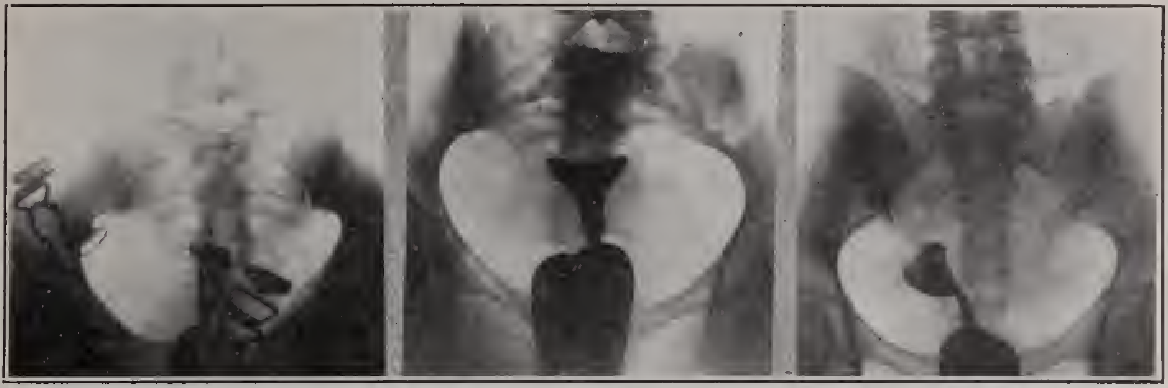

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Fig. 8. Three cases of absolute sterility in which lipiodal visualization showed tubes occluded at the cornual ends. The first patient (a) had been **subjected three times to dilatation and curettage as treatment for her sterility.**

Rubin-negative, and the early onset of pregnancy following the first positive Rubin test point to the insufflation as the probable causative factor.

In a fourth case a primary sterility was relieved immediately following a single positive insufflation with no other treatment; and finally, a relative secondary sterility was changed to a pregnancy two months after the second Rubin. Both tests were positive but air passed at 70-90 mm. of mercury in the second, as opposed to 170 in the first test.

It is interesting to note that, while 33 cases had a single Rubin test (Table XI), 31 of which were positive, only one pregnancy could be fairly ascribed to the test in this group (2.7 per cent). Two tests were made in only 4 cases (seven positive tests) with one success attributable (14 per cent). However, out of the 8 cases in which three tests were made (Table XI), there were the three successes mentioned above, each following the third and only positive test (38 per cent). From this it seems fair to deduce that repeated tests in the Rubin-negative cases might give a higher percentage of successes attributable to the method.

Lipiodol visualization. One of the authors has used this method in a large series (Northwest Medicine, May, 1928). It is indicated for sterility chiefly in patients with persistently negative Rubin tests, where further information concerning one or both tubes or the uterine cavity is desired. In this series three patients were shown to have tubal occlusion at the cornual ends (fig. 8). The diagnostic and prognostic value of such findings should not be minimized. We were able to tell these patients with certainty that their sterility was of a type which was not amenable to treatment, and thus to save them a great deal of time and trouble. Radiography of the tubes may indicate the advisability of plastic operation (transplantation, salpingostomy). We have not been called upon to perform these operations, and share the general opinion to the effect that they offer only a very slender hope of subsequent pregnancy (fig. 9).

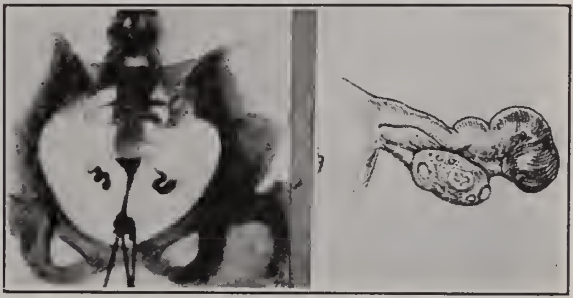
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Fig. 9. a. Lipiodal visualization of tubes occluded at fimbriated ends. Plastic operation might restore patency (not our case). b. Sketch of gross specimen from same case (not our case).

The technic of this procedure (hysterography, salpingography) is simple, and the contraindications sufficiently clear to make the method generally available. Care must be used, however, to obtain exact results. The determination of tubal occlusion by the Rubin test has been substantiated by radiography in the cases in which both methods have been used in this series. We recognize the presence of temporary (spasmodic) closure of the tubes noted by either method. The use of atropine or benzyl benzoate does not appear to relieve this in our experience. It seems reasonable to place more confidence in the evidence of occlusion to lipiodal than to gas, since the criteria are more obvious.

We have shown in several instances that lipiodal passes freely in spite of an apparently well developed sphincter of Kennedy (fig. 10). In one case, injected by an interne, the oil appeared not to pass, yet at operation the tubes were proven patent by the reverse insufflation of Curtis. To avoid such a

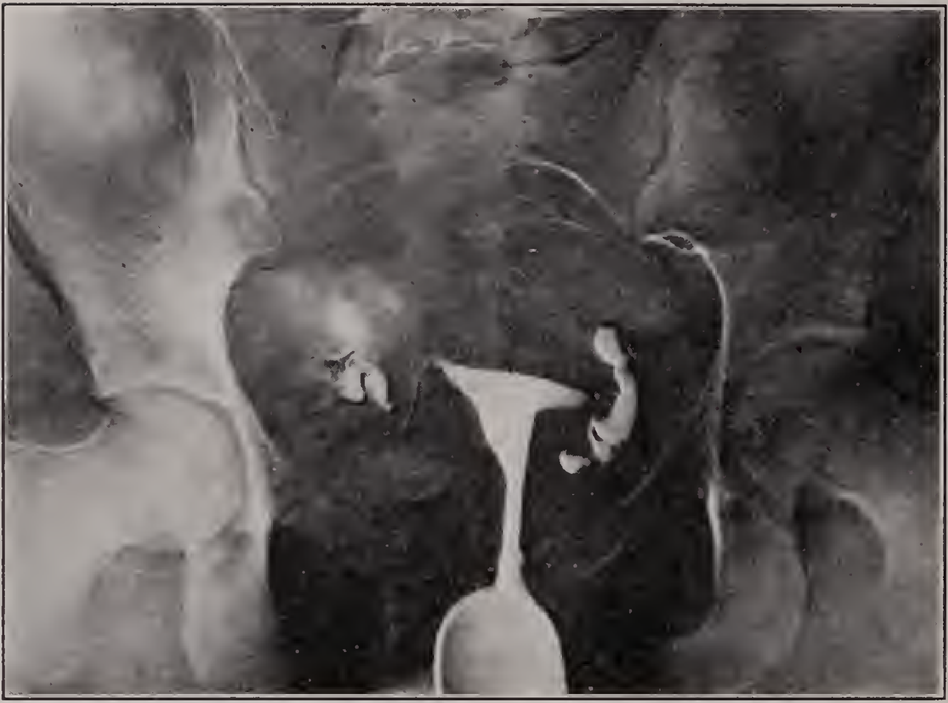

Fig. 10. In this case the differential diagnosis was between acute appendicitis and acute right salpingitis. Salpingoscopy showed a normal tube. At operation the tube was proven normal and the appendix diseased. The so-called sphincter of Kennedy at the cornual ends of the tubes is well shown, yet there was free passage of the oil. Pregnancy followed very shortly, indicating the innocuousness of the injection in this regard. There was a normal delivery of a healthy baby at term.

possibility we now make it a practice to take a twenty-four hour plate to determine whether there has been later leakage of oil into the peritoneal cavity. Many cases at subsequent operation have proven the reliability of the radiographic observations. It must be borne in mind, however, that the method is new, and that considerable reserve is still advisable in passing final judgment from the plates. The real necessity at present is the development of diagnostic acumen in the reading of the films.

The therapeutic effect of the passage of the oil is doubtless similar to that of gas. In connection with the studies of Buckley and Mathieu in regard to the antiseptic action of iodized oils, the question arose in regard to a possible harmful effect of the oil, if present, together with the ascending sperm (fig. 10). It is definitely established that there is no deleterious effect by the oil upon the tubal mucosa. Buckley and Mathieu are at present publishing bacterial studies which seem to establish the entire absence of bactericidal action.

It remained only to study the effect of lipiodal applied directly to a normal specimen of semen. The details of our experiments are unessential. There appeared to be an initial harmful effect on the spermatozoa in the region of the oil globules. This, however, was transient, possibly even an artefact, and later the active organisms were seen actually to penetrate the oil globules with impunity and to emerge with unabated motility. Not only was the motility maintained as well as in the non-treated prepartions, but stained smears of both preparations showed no morphologic defect in the spermatozoa exposed to the lipiodal. This seems to remove any contraindication to the use of lipiodal on the basis of its possible harmful effect on the spermatozoa.

We wish to call attention to the finding of tubes permeable to lipiodal in the presence of massive acute and subacute adnexal infections (fig. 11). This repeated findings strengthens the contraindication to sterilizing operations in patients in the child bearing period. By the use of conservative methods a certain number of these patients may be restored to fertility. Two women under our care who showed masive pelvic involvements, one with practically board-like rigidity and the typical picture of adnexitis and pelvic cellulitis, were treated by rest, removal of consort, diet, diathermy and foreign protein injections, etc., together with eradication of infection in Skene's and Bartolin's glands and the cervix. In each case there followed a normal pregnancy. Both patients have since been delivered of normal healthy babies.

French investigators have suggested the use in the

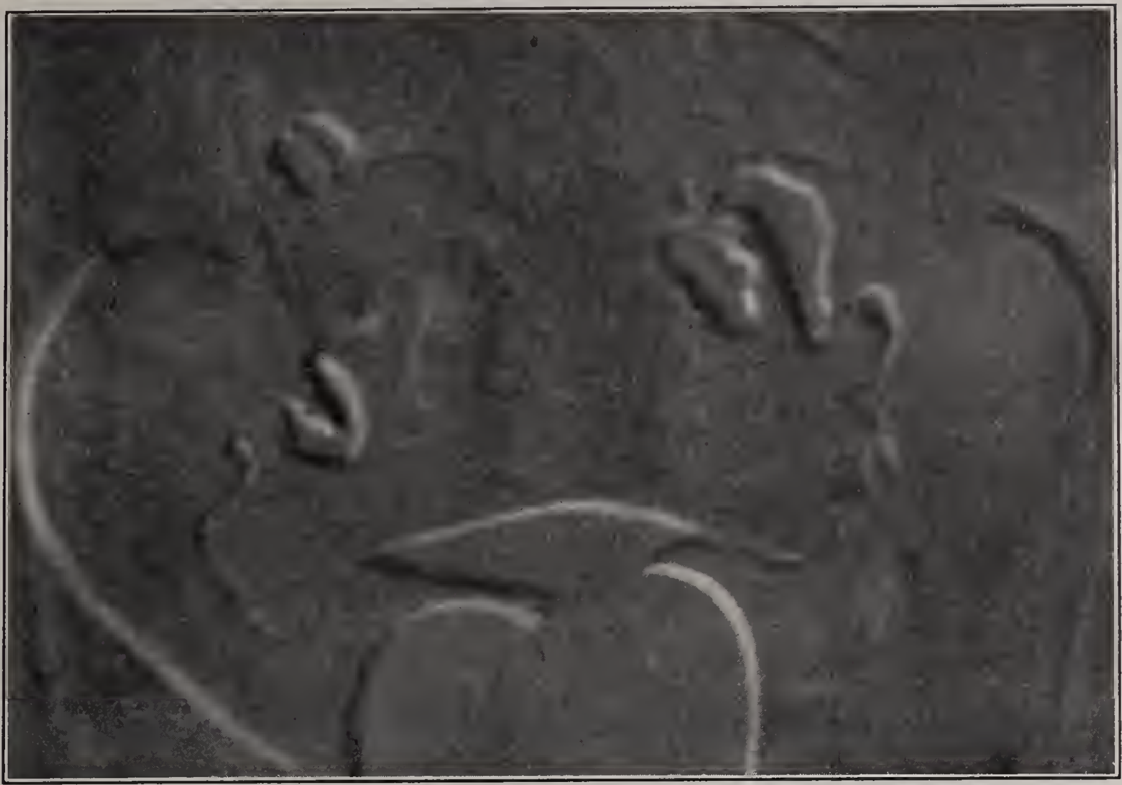

Fig. 11. There was clear cut bilateral acute salpingitis in this case. The finding of patent tubes (even at the fimbriae), as indicated by the spillage and definite dimpled rosette formation, is striking.

future of bland injections through the tubes in cases of active salpingitis, with the object of preventing occlusion and adhesions. The idea is ingenious but it will require considerable courage to prove that such a procedure may be carried out with safety.

Our results with the conservative management of pelvic infections, with the aid of diathermy and foreign protein and more especially diathermy, have led us practically to abandon operation except for patients who are not able to follow our exacting regime, or for the relief of certain sequellæ. We need hardly indicate the desirability of such methods as opposed to operation on the tubes and ovaries in the prophylaxis of sterility. If the conservative methods fail to cure or sufficiently improve the pathology (and this is unusual in our experience), their effects can do nothing but favor the prognosis of later operation. *We consider premature pelvic surgery a major cause of unnecessary sterility.*

It will be pertinent to mention here the use of a method of treatment popular in the days of the "shot gun" treatment of sterility. We refer to the time honored practice of dilatation and currettage. We have not had occasion to use this procedure even once in the treatment of fifty-nine cases of sterility. Dilatation may occasionally be indicated, but the surprising fact is that in the present day literature combined dilatation and curettage are much more often mentioned as a cause than as a treatment of sterility (Mathieu and Schauffler, *Am. J. Gyn. and Obst.*, Aug., 1928, XVI).

Linear cauterization. The importance of linear cauterization in the treatment of cervical erosions and endocervicitis, and thus in the treatment of female sterility, has obtruded itself upon us. It is impossible to overlook in our records the frequency with which this therapeutic measure appears to be the obvious factor in the relief of the sterility. Out of the thirty-one cases which had linear cauterization in the course of treatment for sterility, seven can be excluded as obviously not suitable (unsatisfactory semen) negative Rubin, insufficient time elasped, etc.). Out of the remaining twenty-four, in which the outstanding factor seemed to be erosion generally with endocervicitis, the sterility was relieved in eleven cases (18 per cent of series). Cautery alone was held responsible in eight of these and cautery together with another factor judged less important in three. In four additional cases cautery was used but thought secondary to other therapeutic factors for rather obvious reasons. The number of failures in the same general type of case was ten. The outstanding pathology varied from small localized erosions to massive erosion with eversion

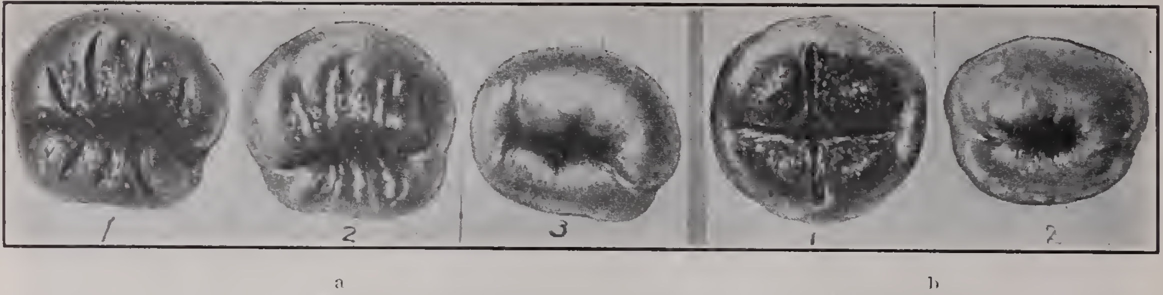

Fig. 12. Method and results with linear cauterization (Matthews).

and severe chronic endocervicitis. The treatment met the indication as nearly as possible.

The longest duration of the sterility in this group of cured cases was six years, the shortest two years, average 3.7 years. Four were primary and five secondary sterility. Pregnancy followed the last cautery treatment by less than one month in the shortest and by nine months in the longest interval with an average of six and one-half months. More than one subsequent pregnancy occurred in three cases.

In one case pregnancy occurred with no subsequent menstruation. We were skeptical as to the role of cautery in this case, as the optimum effect of this type of treatment can hardly be expected short of two or three months, since the healed and contracted scar is essential to the plastic result. The average lapse of six and one-half months between final treatment and pregnancy seems to us a reasonable interval for the complete restoration of the canal to normal, and the incidence of a successful impregnation.

In the light of these findings, we are convinced that in the use of linear cauterization we have an efficient means of correcting cervical deformity, eliminating harmful cervical secretion, and thus of curing sterilities of cervical origin. We note with interest that cervical stenosis was not a factor in the delivery in any of these cases (fig. 12).

Not only has the cautery been of direct value in curing sterility of cervical origin, but also it has served repeatedly to prepare the way for the use of insufflation or lipiodal injection by clearing up potentially dangerous erosions and endocervicitis. In distinct contrast to the idea that linear cauterization may result in subsequent stenosis, we have found it of definite value in curing several cases of stenosis at the external os. It is particularly valuable where there is a fine diaphragmatic stenosis of the external os, with a dilatation of the canal above. Several radial incisions are made with the cautery, a dilator inserted and the os gently enlarged. The dilatation is repeated at frequent intervals and the result after complete healing is highly satisfactory. The nasal wire is more satisfactory for this procedure than is the heavier bladed type of cautery, because the fine linear incision results in less extensive scar.

Retroversion of the corpus uteri. This condition was present in thirteen cases (Table XI). In one instance the husband's semen was found at fault. Replacement was successful in seven cases and followed by pregnancy without other obvious contributing factors in two cases. Three other pregnancies in this corrected group were clearly due to other procedures. It is notable that *pregnancy followed in four cases in which replacement was not done or was unsatisfactory,* but in which other treatment was used. These findings seem to indicate that retroposition per se is more often the chance accompaniment, the actual cause of an existent sterility. We did not use a suspension operation as treatment of the sterility in any case, and believe our findings have justified this abstention.

In conclusion, we wish to call attention to Table *X* which constitutes an analysis of the twenty-five pregnancies occurring in the group of sixty-seven women who presented themselves as unable to bear children. Out of this group, the duration of the complaint was less than three years in nine instances. Among these nine there occurred five of the pregnancies. This, of course, would lower our percentage of success in the absolute definition of sterility. We wish again to emphasize, however, that we are presenting simply for what it is worth a study of the records of women coming as office patients, desiring and apparently unable to have children. We have ascribed the major part of the successes to one or another form of treatment (Table X). On the other hand, 27 per cent could not be accurately placed. No doubt, as Polak might point out, an even greater number of the pregnancies than we realize may be the product of chance. However, with a full realization of this possibility, we hope that some of the suggestions which come from our experience may prove of general value.

Medical Arts Bldg.

INFECTIONS OF THE FEMALE PELVIC ORGANS *

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Pelvic infections include those of the uterine tubes, the ovaries, the pelvic peritoneum and the pelvic cellular tissues. The structures are also collectively termed the uterine adnexa. Out of 916 consecutive gynecologic patients at the Mercy Hospital, 216 cases, or 23.78 per cent, were pelvic infections; while in 906 cases entering my service at the Cook County Hospital there were 820, or 90.54 per cent. It is obvious that pelvic infections form a prominent group in genital diseases of women. The general practitioner or "family physician" is usually consulted first by a woman suffering from an infection of the genital tract. Hence it devolves upon him to render a diagnosis and advise or institute the indicated treatment. These are the reasons why I have chosen this subject for your consideration.

Pathogenic bacteria gain entrance to the genital tract from without or within. The exogenous infections occur in connection with the incidents of sexual life, as coitus, menstruation, pregnancy, labor, puerperium, and gynecologic examinations and treatment, particularly surgical procedures; and in association with such infectious diseases as measles, scarlatina, diphtheria, smallpox, chickenpox, which not only cause exanthematous but also enanthematous eruptions. The pathogenic organisms concerned in these ascending infections are chiefly the gonococcus, the strepto- and staphylococci, the colon bacillus and the specific organisms concerned in the infectious diseases enumerated.

The endogenous infections invade the pelvic organs either by a descending route, or are carried to the pelvic organs by the blood or lymph-stream. Descending infections ensue from adhesions of the abdominal to the pelvic organs. They may result from appendicitis, intestinal tuberculosis, typhoid fever, actinomycosis and so forth. The blood and lymph-borne infections arise from septic sore throat, pulmonary tuberculosis, acute lobar pneumonia amongst others. Infections with spirocheta pallida and bacillus Ducrey must always be thought of, though their activity remains localized to the primary sore in the beginning of the disease.

About 75 per cent of the female pelvic infections are gonorrheal, about 20 per cent pyogenic and about 5 per cent tuberculous. Infection of one part of the genital canal spreads by continuity to the other parts. In the ascending infections the internal uterine os offers an effectual barrier to an upward extension of an infectious process in the lower genital tract. This check unfortunately becomes inactive during menstruation, labor and puerperium. Thus may be explained the frequent onsets of pelvic infections at these periods. This observation may also serve as a warning to the physician not to practice unnecessary intrauterine instrumentation and medication.

The majority of pelvic infections, about 65 per cent, fortunately terminate in a complete cure with restitution of normal physiologic and anatomic function, and an additional 20 per cent end in a subjective cure. The patient is free from symptoms and reacquires normal capacity for work and enjoyment of life. The remaining 15 per cent constitute the chronically invalided patient who must be subjected to radical surgical measures of treatment to restore health.

The chronic invalid and the functionanlly incapacitated patient should require the physician's chief attention. Chronic invalidism is expressed in more or less continued and severe deep-seated pelvic pains, menstrual disturbances as profuse, prolonged, too frequent and painful menses, and leucorrhea. In the beginning the disturbances are localized, but as years pass the general health of the patient becomes seriously undermined.

Functional incapacity means sterility. If the functions of ovulation and menstruation are normal, if a chronic cervicitis with profuse leucorrhea does not exist, and if the husband's semen is compatible with the cervical and vaginal secretion as determined by the Hunner test, then the sterility is probably caused by impatency of the uterine tubes.

Acute and subacute infections of the female genitals indicate conservative and expectant treatment. General and genital rest must be instituted. Bimanual examinations should not be repeated after the first and diagnostic palpation has been made, unless the patient's progress is unsatisfactory and complications are feared. Smears should be taken to determine the nature of the infection. The patient is placed in the recumbent position. The head of the bed is elevated. An ice-coil or cold compresses are applied over the lower abdomen. Temperatures above 102.5° F. require cold sponging and ice cap to the head. If peritoneal irritation is present, indicated by tympanites, nausea and vomiting, food

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* Read before the Thirty-sixth Annual Meeting of Idaho State Medical Association, at the Tristate Meeting of Idaho, Montana and Wyoming State Associations, Yellowstone Park, Wyo., Aug. 27-29, 1928.

per mouth is withheld. If the symptoms persist, gastric lavage should be used. Low enemas are given to evacuate the bowels. When food is permissible, it should be bland and nourishing. Pain may be relieved by phenacetin, aspirin and, as a last resort, morphine.

As our service is strictly gynecologic, we rarely see the fulminant hemolytic streptococcal peritonitides observed after abortions and labor. These are treated with antistreptoccal serum (10 c.c. of special concentrated serum of Parke, Davis & Co.) intravenously, as soon as the diagnosis has been made from the vaginal smear. Quinine bihydrochloride, grs. 5, dissolved in 10 c.c. of sterile distilled water, is injected intramuscularly daily if necessary. It may also be given intravenously. Blood transfusion is given early in the disease to increase the patient's resistance to the invading organisms and their toxins, and is repeated as a supporting measure in long drawn out cases. The Percy method may be used. However, the donor should be in a separate adjoining room and the blood should be obtained by a surgical team not connected with the recipient's.

Persistence of temperature beyond eight days usually means the formation of an abscess or some other complication, as in favorable cases the temperature drops by lysis and becomes normal within three to seven days. Only then, when the condition of the patient does not improve, is a reexamination indicated. A peritoneal abscess in the rectouterine pouch causes a bulging in the posterior vaginal fornix, while a pelvic cellular abscess may be found lateral to the uterus and from there may spread anteriorly to become palpable above Poupart's ligament. As soon as fluctuation appears drainage is instituted. The preferable route is the vaginal, if bulging appears in the vaginal fornices. Anterior abscesses, of course, are drained abdominally. Abscess formation in the free pelvic cavity is, therefore, the one indication for surgical interference in acute pelvic perimetritis. Pyosalpinx is never drained, as it may undergo early resolution which may be promoted by injections of 10 c.c. of sterile milk or an ampule of aolan in the muscles of the buttocks, given at intervals of four days six to ten times.

If a normal temperature has persisted for ten days, a second bimanual examination is made. Should the temperature remain normal, the patient is permitted to be up and about. Within another three to four days she may be discharged and is told to return for examination after each menstrual period. Resolution of the inflammatory tumefaction is as a rule rapid and completed within one to six months. It may be hastened by daily hot baths, the internal administration of iodide of potash and vaginal douches of iodine solutions.

Unresolved pelvic infections terminate in chronic pelvic inflammations which are characterized by deep pelvic pain, menstrual disturbances and sterility and the discharge of a purulent substance. Ability to work and enjoyment of life are reduced.

Chronic invalidism should be treated conservatively. An attempt should be made to bring about resolution by the use of diathermy, Priessnitz compresses, medicated vaginal douches, the internal administration of arsenic compounds and potassium iodide and complete abstinence from sexual life. The husband must be told to undergo competent treatment, if the infection was primarily gonorrheal.

If conservative treatment has been faithfully carried out and a cure is not obtained, surgical measures are instituted. They usually consist in the freeing of adhesions, the removal of pus sacs, the placement of the uterus in an anteverted position, careful hemostasis and exact peritonealization. The possibility for future conceptions should be created, therefore menstruation and ovulation must be conserved if at all feasible. A coexisting chronic cervicitis should be treated at the same time. Cauterization suffices in the majority of cases.

The following table shows at a glance the frequency and kind of resulting chronic infections observed at my services at Mercy and Cook County Hospitals. It also gives the numbers of operations and operative mortality. The number of acute and subacute cases is low. At the Mercy Hospital they are treated ambulatory in the out-patient department. It is deemed advisable not to keep such patients with the noninfected cases to prevent contamination of the latter. At the Cook County Hospital the acute infections are assigned to the wards for venereal diseases. Frank cases of appendicitis remain in the gynecologic service at the Mercy Hospital, while they are referred to the surgical service at the Cook County Hospital. The low operative mortality should be attributed to the strict observation of the indications for safe surgical treatment.

Sterility is a complex and serious problem. The desire of a married woman to have offspring justifies diagnostic and therapeutic interference. The most frequent cause of sterility is the closure of the tubal lumen, resulting from a preceding pelvic infec-

Table Showing Frequency of Infections of Female Pelvic Organs in a Private and Public Hospital Service.

Total number of cases	Mercy Hospital 916			Cook County Hospital 906		
	Number	Oper.	Deaths	Number	Oper.	Deaths
Salpingitis:						
Acute	2			26	3	
Subacute	11	1		42	10	
Chronic	35	31		292	272	6
Parimetritis:						
Acute	7	2*		67	52*	
Chronic	71	44		295	259	6**
Retroflexions:						
With adhesions	29	28		64	63	
With complications	25	23		34	19	
Appendicitis:						
Acute	6	6	1			
Subacute	4	4				
Chronic	23	23				
Plus tubal pregnancy	1	1				
Plus normal pregnancy	2	2				
Total	216	165	1	820	678	12

*Drainage of pelvic abscesses: Abdominal 36
Vaginal 16

**Two deaths from carcinoma;
Three deaths from tuberculous infections.

Percentages of Pelvic Infections, Operability and Surgical Mortality.

Disease	MERCY HOSPITAL					COOK COUNTY HOSPITAL				
	Number	Oper.	Percent	Deaths	Percent	Number	Oper.	Percent	Deaths	Percent
Salpingitis:										
1. Acute	2	0	0			26	3	11.54		
2. Subacute	11	1	9.09			42	10	23.81		
3. Chronic	35	31	88.57			292	272	93.11	6	2.05
Total	48 or	5.24 per	cent	0	0	360 or	39.78 pe	rcent		
Parimetritis:										
1. Acute and subacute	7	2*	28.57			67	52**	77.61		
2. Chronic	71	44	61.97			295	259	87.78	6***	2.03
Total	78 or	8.52 per	cent	0	0	362 or	39.94 pe	rcent		
Retroflexions:										
1. Adherent	29	28	96.55			64	63	98.44		
2. Complicated	25	23	92.0			34	19	55.88		
Total	54 or	5.89 per	cent	0	0	98 or	10.82 pe	rcent	0	0
Appendicitis:										
1. Acute	6	6	100.00	1	16.67					
2. Subacute	4	4	100.00							
3. Chronic	23	23	100.00							
4. Acute with tubal Pregnancy	1	1	100.00							
5. Acute with uterine Pregnancy	2	2	100.00							
Total	36	36	100.00	1	2.78					
Total all cases	216	165	76.39	1	0.46	820	678	82.62	12	1.46

*Vaginal drainage 2.

**Vaginal drainage 16; Abdominal drainage 36.

***Deaths from carcinoma 2; from tuberculous peritonitis 3.

tion. If palpable evidences of former infections are present, then the diagnosis is made by palpation and corroborated by tubal gas inflation and hysterography. If palpable evidence cannot be elicited, then closure of the oviducts is determined by tubal air inflation and the site of obstruction is located by hysterosalpingography. Rubin and Kendall must be given credit for the development and perfection of these newer diagnostic procedures in gynecology.

Tubal air inflation and hysterosalpingography must not be performed, if a history of recent infection, amenorrhea and leucorrhea is obtained and the patient is in the period of premenstrual endometrial hypertrophy or postmenstrual endometrial repair. A hidden infection may be recognized by inoculating 5 c.c. of the patient's blood, taken from an arm vein with a cervical smear. If after an incubation of twenty-four hours bacteria have grown, then pathogenic bacteria are present in the genital tract. Charting the temperature, making a count of the leucocytes and determining the sedimentation time of the red blood corpuscles give further evidence of the presence of an active infection in the patient.

Amenorrhea is a contraindication to any intrauterine manipulation, unless pregnancy can be excluded. During the premenstrual period the normal hypertrophy of the endometrium may cause an obstruction of the uterine opening of the tubes. Endometrial tissue may also be forced through the tubal lumen into the abdominal cavity, where it might give rise to the formation of endometriosis. Likewise, in the postmenstrual period of repair such an accident might occur. It is, therefore, evident that the safe time to perform tubal air inflation and hysterosalpingography is during the resting stage of the menstrual endometrial cycle, which lasts from the eighth to the fourteenth day of the cycle calculated from the beginning of the last menstruation. Profuse leucorrhea with the coexisting chronic cervicitis must be cured before instituting diagnostic tubal inflation and salpingography.

The technic of air inflation of the uterine tubes is very simple. Strictest asepsis must always be observed. A "Y" shaped metal tube is attached to a uterine metal cannula, perforated at the tip and provided with a nozzle-shaped soft rubber shoulder about 4 to 5 cm. from the tip. Pressure of the rubber shoulder against the external os closes the latter, air and water tight. To one arm of the connecting piece a manometer is attached to enable one to control the air pressure. To the other arm a rubber bulb is connected of a capacity of 30 c.c.

The patient is placed on a pyelogram table in a lithotomy position. The cervix is exposed through a bivalve speculum and grasped with a tenaculum forceps. The cannula is inserted intrauterine. Traction on the tenaculum forceps and simultaneous upward pressure on the cannula close the cervix air tight. The tenaculum forceps may be secured in a rotating clamp attached to the cannula. Thus both hands are free. The rubber bulb is slowly compressed. If air enters the abdominal cavity under 60 to 100 mm. mercury pressure, then the tubes are patent. Should air not enter until about 150 mm. pressure has been exerted, then the tubal patency is doubtful. Should air not enter with 200 mm. pressure, then the tubes are closed. The pressure should be maintained for at least ten minutes. This can be done by closing a stopcock inserted between the rubber bulb and the connecting tube. Uterine and tubal spasm slowly subside and the air will now enter, if the tubes are open.

Should the air patency test be doubtful or negative, then the manometer and rubber bulb are removed and 10 c.c. of warm 40 per cent iodized oil drawn into a rubber bulb glass syringe are slowly injected until the entire amount has entered the uterine cavity. The stopcock is now closed and an x-ray picture taken. It is immediately developed and if it proves unsatisfactory another is taken ten minutes later. A negative result is frequently obtained in the first picture and a satisfactory one in the second. Evidently the uterine and tubal spasm has subsided in the meantime and the uterine contraction has forced the oil upward. A spill around the ampullary extremity of the tube or oil within the free pelvic cavity indicates openness of the uterine tubes. If the oil remains within the uterine cavity, then constriction in the intramural portion of the tubal lumen is present. The latter may be unilateral. Oil in the uterine tube without spill means closure at the abdominal os. If negative results are obtained, it is advisable to repeat tubal inflation and salpingography after four weeks. If the uterine tubes are found closed, then the diagnostic findings may be considered correct (figs. 1 to 8).

The uterine tubes can only be opened by surgery. Stricture of the intramural portion demands resection and reinsertion into the uterine canal through a newly made channel. Closure at the abdominal end requires a plastic operation. The end is removed slantingly; the tubal mucous membrane is attached to the serous membrane with fine catgut sutures. Finally a twig of heavy chromic catgut is attached to the stroma and inserted into the tubal lumen to assure patency. The most careful hemostasis must be practiced to obviate postoperative adhesions.

These operations were performed in the clinic nines times during the last year. Eight patients were followed up. Hysterosalpingography revealed four cases with patent tubes. In a series of three hundred operations for closure of the ampulla pregnancies were seen in about 12 per cent. The operation for tubal resection and reimplantation has yielded several pregnancies. Strassmann reported the first full term pregnancy after this operation.

Should the uterine tubes be so badly damaged that they must be removed, then a healthy ovary, with conservation of its normal blood supply, may be inserted into the uterine cavity as recommended by

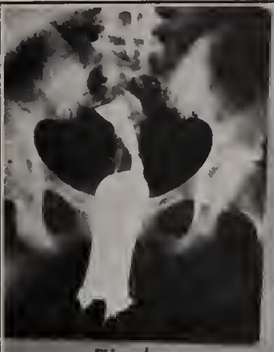
Fig. 1

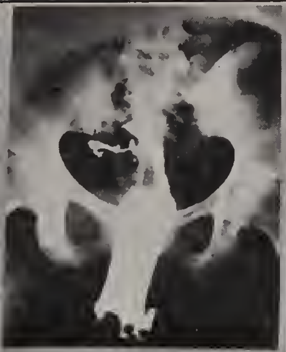
Fig. 2

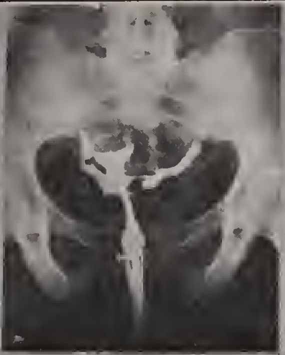
Fig. 3

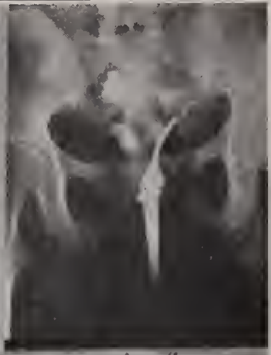
Fig. 4

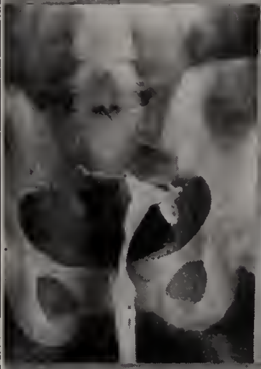
Fig. 5

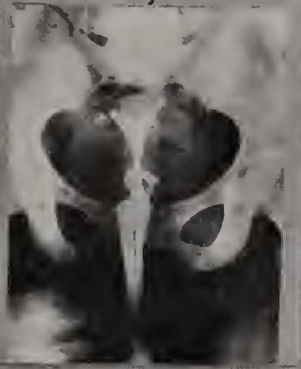
Fig. 6

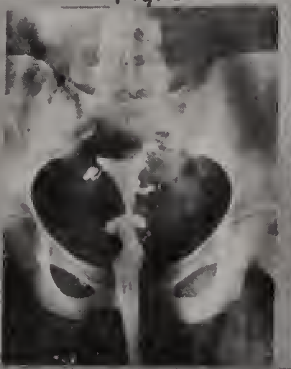
Fig. 7

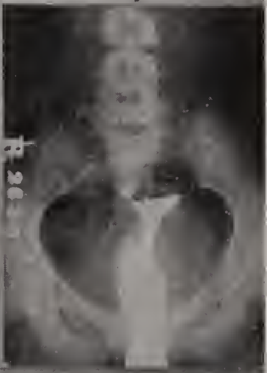
Fig. 8

Fig. 1. Injection of 10 c.c. of iodized oil shows apparently both tubes closed.

Fig. 2. Same as fig. 1 but taken ten minutes later. Oil now has passed through right tube and two oil globules are seen in free pelvic cavity. Left tube is apparently closed at isthmus.

Fig. 3. Spill at both fimbriae indicates patent uterine tubes.

Fig. 4. Indicates closed tubes and extreme spasm of uterus, expelling oil immediately.

Fig. 5. Same patient as in fig. 4 after right stomatoplastique, and resection and reimplantation of left tube. Test made fourteen weeks after operation.

Fig. 6. Apparently tubes are closed at fimbriae.

Fig. 7. Same patient as in fig. 6 but radiogram taken fifteen minutes later. Iodized oil is now contained in a closed sac on left side. (Taken Oct. 21, 1927.)

Fig. 8. Same patient as in fig. 6. Left tube and ovary were removed. Right tube was resected and reimplanted. Note spill around fimbriae and globules in free pelvic cavity. (Taken Dec. 28, 1927.)

Tuffier and Sellheim. The healthy ovary may also be hemisected and transfixed to the cornu of the uterus which has been amputated so that an opening into the uterine cavity results. Estes performed this latter operation ninety-six times and observed twelve full term pregnancies.

It is evident that operations for sterility should not be done until a Hunner test has established compatibility of semen and cervical secretion. The small amount of air used in tubal patency test is devoid of danger, as pressure against the diaphragm does not occur. It is well known that pneumoperitoneum should not be used in patients with cardiac or pulmonary disease, as sudden deaths and severe shocks have been observed.

In conclusion the following summary reiterates the more important observations discussed:

1. The frequency of pelvic infections renders them of a great importance to the general practitioner.

2. The treatment should be conservative and symptomatic. Abscesses in the free pelvic cavity should be drained but not tubal or ovarian abscesses.

3. Chronic invalidism should be treated surgically. Surgery should attempt to remove the remains of an unresolved infection with conservation of ovulation, menstruation and fruitfulness.

4. Sterility is a frequent result of pelvic infections. The desire of a patient for offspring justifies surgical interference, if the tubal lumen is found to be closed by the inflation test and hysterosalpingography. The surgical procedures have been briefly described.

5. Modern methods of diagnosis in gynecology have contributed greatly to a more correct treatment of sterility. Whether the results will increase the number of pregnancies to warrant such operations must be left to future reports.

25 East Washington Street.

MILK INJECTIONS IN THE TREATMENT OF PELVIC INFLAMMATORY DISEASE *

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Conservative treatment of the inflamed pelvis due to gonorrheal infection should be carried out whenever possible. By conservative I refer to medical or palliative measures rather than surgical. Nearly all practice conservatism in the acute pelvis, but the subacute or chronic condition is too often subjected to early surgery; too often because surgical treatment must eliminate all the inflamed tissue, if any permanent, beneficial results are to be obtained.

To remove all inflammatory tissue often requires the total extirpation of the fallopian tubes and ovaries, and at times a subtotal hysterectomy. The best that can be hoped for is that a portion of these organs may be left, but these frequently fail to function properly. The ideal method of treatment would be some measure which would restore these diseased organs to normal without the removal of any tissue, making it possible for them to again act as they originally did. Unfortunately this can not always be done.

In consideration of the inflamed pelvis a sharp distinction should be drawn between the acute or subacute condition and the chronic. Any pelvic infection that has fever, however low, with an accompanying leucocytosis should be considered an acute inflammatory condition, no matter how many previous attacks the patient may have had. Treatment should be conservatively directed until the patient's temperature has been normal, day and night, for at least ten days or better two weeks, and the leucocyte count and sedimentation time should also be normal before surgical measures are considered. Even then it is best to do a test bimanual examination to determine whether or not this will cause a secondary flare-up of fever and leucocytosis. If surgery seems necessary, the operation should again be deferred. The exception to the above rule is the walled-off pelvic abscess which is accessible to the cul-de-sac and can be opened and drained through the vagina.

It is in the treatment of the acute and subacute inflammatory conditions that I have found milk injections to be of value. I first became interested in the use of this form of treatment four years ago, after hearing Gellhorn of St. Louis read a paper on this subject, in which he reported some unusual results he had obtained. Since then I have used milk injections in numbers of patients suffering with pelvic infections, and believe that the results obtained are worthy of reporting and discussing. Nonspecific protein therapy is being used rather widely in other fields of medicine with reported good results.

In regard to the acute or subacute infection which has been managed as outlined above, not infrequently on examination, after the conservative period of treatment, all pathology seems to have disappeared. The patient can be discharged from the hospital and kept under observation at the office. It is quite important in gonorrheal infections to search for and clear up all evidence of the disease in the lower genitals; that is, infected Skene's ducts, Bartholin's glands and the cervix. These are the locations where chronic gonorrhea persists. Recurrent attacks of salpingitis are said to originate from an ascending acute infection from below, starting at one of the above mentioned locations of chronic gonorrheal infection (Curtis).

The first question that arises in consideration of this problem is whether patients with gonorrheal pelvic disease recover with no treatment other than rest. This can be answered affirmatively but with reservations. Many of these patients have low resistance to infection so that the disease not only runs a long, tedious course, but the extent of damage done to the genital organs is quite marked, particularly if more than one attack occurs.

Why is it that some women after an initial gonorrheal infection develop pelvic inflammatory disease while others do not? Some of our text-books lay down rules such as this: "The physician must be careful in treating cervical gonorrhea not to force the infection into the endometrial cavity, also to have the patient remain quitely in bed during the menstrual period to prevent an upward extension of the disease." Is it not more rational to believe that the resistance of one patient toward the infection is great enough to overcome and limit the disease, while the other's is not? We know that many women, who acquire the disease, receive no treatment and take no precautions, have the infection limited to the lower genitals and eventually recover completely.

What is it that limits the infection in some and in others allows it to spread like wild fire? We

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* Read before the Fifty-fourth Annual Meeting of Oregon State Medical Society, Portland, Ore., Sept. 20-22, 1928.

* From the Department of Gynecology, University of Oregon Medical School.

think of and refer to this as the patient's resistance. Many attempts have been made to accurately measure this power but no satisfactory method has been worked out that is of practical value to the clinician. Do organisms of the same type differ in their virulence? Undoubtedly they do, but so also do patients differ in their reaction toward disease germs, some having a great amount of resistance while others seem to have little or none.

The word resistance, while it embodies much, is rather vague at best. We accept the term as meaning the patient's ability to fight infections or disease. This struggle is carried on by the cell which reacts with various defensive measures and exhibits; as Peterson puts it, a consistent effort to dilute the noxious agent, to remove it by intracellular or extracellular digestion, to neutralize it; these failing, to wall it off and put it outside of the current activity. Why then, if this is the case, do not cells overcome every disease that affects them? The most logical answer is that the cells become exhausted in their struggle and allow the disease to become chronic. It is here that protein therapy is of value in calling forth greater fighting power in the cell, stimulating it to greater activity.

Peterson tells how protein therapy grew out of immunizing and curative treatment with sera and vaccines in use about thirty years ago. The principle enunciated had heretofore been that the organism in its resistance to disease and in the defense against bacterial invasion must be supported by essentially specific means, whereas the basis of protein therapy rests upon a nonspecific action. In other words, it is now a definitely established fact that many infectious diseases can be cured by the introduction into the body of nonspecific substances which in themselves have no relation to the infection under treatment (Gellhorn).

Among the conditions which a gynecologist is called upon to treat, one of the most unsatisfactory, as far as end results are concerned, is the inflamed pelvis. In the gonorrheal type the destruction which occurs often calls for the removal of one or both tubes and ovaries, and not infrequently the uterus as well. While the patient may make a good operative recovery, she frequently has vague pelvic symptoms for a long time. If both tubes and the uterus have been removed, the chance of future childbirth is, of course, out of the question. Too often an unsatisfactory feeling on the part of the patient toward the physician remains.

Any procedure that will tend to bring about better results will be welcomed by the conscientious physician. Milk injections are particularly applicable to these inflamed pelves. It is here, by aiding the cell in its battle against gonococcus, that much good can be done. Added resistance on the part of the individual affected may entirely overcome and eradicate the disease and, as many of these patients are young, the possibility of future pregnancy is left.

What reaction occurs in the patient given milk injections? Locally, if injected intramuscularly, there is a moderate amount of swelling at the site of the injection with some tenderness which lasts two or three days. The local reaction to the injection, however, is very mild compared to the reaction one gets from the intramuscular injection of iron or mercury. The general reaction occurs most often six to eight hours after the milk is given. The patient frequently has a chill, followed by moderate rise in temperature. There is a feeling of mild malaise and general depression, while this reaction is occurring.

A striking thing is the prompt relief of pain in the pelvis following the treatment. This is so often true that it is hard to keep these patients under treatment after the two or three injections have been given. Their general condition is much improved, their appetite returns and they look and feel very much better. In our cases we have noticed a rise in the leucocyte count at times, but not the hyperleucocytosis of 40,000 reported by Peterson. I regret to say that we did not have daily leucocyte counts run on all of our patients, owing to a lack of facilities. An anaphylactic shock has not occurred in any of our cases nor has an abscess appeared at the site of injection.

The most practical preparation to use is ordinary cow's milk. This is centrifuged, the fat removed and the balance put in a boiling water bath for ten minutes. It is then ready for use. The best site for injection is the gluteal region, well up on the side of the iliac bone. We use a long sharp needle and the milk is injected deep into the muscle, care being taken not to puncture and inject into a vein. The initial dose should be five c.c., followed in two days by a dose of ten c.c. The subsequent injections are given every two days, depending on the patient's condition. From two to ten doses may be required, the average being about six. Milk injections are particularly useful in gonorrheal pelvic infections and are being used by some as an adjunct in the treatment of postpartum infections.

The following case report will be of interest.

Case 1. Mrs. M. H., age 24, entered the hospital with a recurrent acute attack of gonorrheal salpingitis of ten days' duration. Her initial infection occurred six years before. Her temperature on admittance was 103.6°.

Examination showed large bilateral pyosalpinx with an indurated mass posterior to the uterus, presenting the picture of a frozen pelvis as the uterus and adnexa were solidly fixed in the pelvis. The patient stated that she was anxious to avoid an operation if possible, and desirous of being married and having children at a later date.

Eleven milk injections were given, extending over a period of four weeks. On discharge from the hospital all pathology had disappeared except a small amount of induration in the right adnexal region. This patient was under observation at my office from time to time for eight months following this attack. Under treatment the lower genital lesions cleared. There has been since no recurrence of trouble.

Case 2. Mrs. L. N., age 24, entered the hospital September 19, 1927, complaining of abdominal pain. One year previously she had had a similar attack of trouble. Examination revealed a left gonorrheal pyosalpinx. Temperature on admission was 100.4°.

Four milk injections were given, the pain subsiding after the second. At the time of discharge, after being kept in bed two weeks with prolonged hot vaginal irrigations daily, the swelling in her left side had disappeared. Seven months later this patient consulted me at my office, stating that she had skipped two menstrual periods, and upon examination she was found to be pregnant.

Case 3. Miss V. P., age 22, entered the hospital complaining of severe pain in the lower abdomen, which had been of three weeks' duration and was growing worse. Examination showed large bilateral pyosalpinx, and there was extensive edema of the pelvic cellular tissues.

Seven milk injections at intervals of two to three days were given, combined with prolonged hot vaginal irrigations, extending over a period of two or three weeks. This patient made a prompt recovery and all pelvic pathology disappeared. Examinations at intervals of one to two months for the past fourteen months have shown no return of pathology.

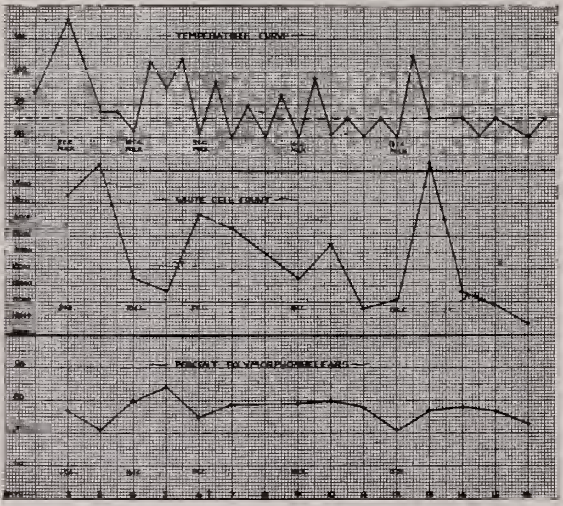

Diagram showing the effect of milk injections on the temperature, white blood count and the polymorphonuclear leucocytes. Recordings were made daily (Case 4).

Another interesting result is shown in the following case report:

Case 4. Miss O., age 24, entered the hospital complaining of severe pain in the lower abdomen of one month's duration. Examination showed a mass posterior to the uterus, causing a bulging of the cul-de-sac. Smears were positive.

Five milk injections were given, combined with hot vaginal irrigations and rest in bed. She was discharged from the hospital at the end of three weeks. The mass was reduced considerably in size, was movable and had lost most of its tenderness. The accompanying chart shows clearly the typical course of this patient. Daily white blood counts were made. Note the effect of the milk injections on the white count, particularly the polymorphonuclear cells.

CONCLUSIONS

Milk injections aid the patient to build up resistance against pelvic infection, particularly the gonorrheal type.

The pain and tenderness are more quickly relieved, and the pathology disappears more rapidly under this form of treatment.

Less surgery will be necessary, if this treatment is used routinely, since many patients recover entirely without operation.

Patients who of necessity have to undergo operative treatment seem to be better surgical risks after having had milk injections.

INTERSTITIAL PREGNANCY

REPORT OF A CASE

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AND
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LEWISTON, IDA.

Interstitial pregnancy is the rarest form of ectopic pregnancy with the exception of ovarian, and is deserving of special consideration because of the higher mortality associated with it. Rosenthal, in a series of 1324 cases of extrauterine pregnancies from the literature up to 1896, found that about 40 or three per cent were of the interstitial variety. Wynne[1] studied 1547 cases of ectopic pregnancy, of which 18 or 1.1 per cent were of the interstitial variety. Oastler[2] found two cases in 106. Tait[3] found only six specimens in the English museum up to 1888. Foskett[4] found one case in 117. In the gynecologic clinic of The Johns Hopkins Hospital there have been over 304 cases operated upon, only two of which were interstitial (Wynne[1]). One of us (E. G. B.) has operated on close to 100 cases of ruptured ectopic pregnancy, and this is the first case seen where rupture took place through interstitial portion of tube.

The mortality in interstitial pregnancy is considerably higher than in the other forms, due to the large size of the torn vessels, and death from hemorrhage may occur before operative intervention is possible. Traupin[5] states that the prognosis in this type is very grave, giving a mortality of 11.9 per cent with operation. Wynne, in his series of 304 cases of ectopic pregnancy, including all types, found a mortality of four per cent. Brady[6] in a series of 50 consecutive cases had no deaths. Schumann[7] states that the mortality in ectopic pregnancy should not be over four per cent, given an efficient hospital and competent surgeons. According to these figures the mortality associated with interstitial pregnancy is about three times that of ectopic pregnancy in general, so it is a fortunate thing that the interstitial variety forms a little over one per cent of all cases of extrauterine pregnancy.

Etiology of interstitial pregnancy is in general that of all extrauterine cases, and it is not our purpose in a brief case report like this to enter into a detailed discussion of the etiologic factors of ectopic pregnancy. We may state, however, that the causative factor in any case will fall into one of two large groups: (1) abnormalities within the lumen of the tube which cause obstruction to the passage of the ovum; (2) factors outside the tube which by pressure or kinking may obstruct the tubal lumen. By far the greater number of tubal pregnancies are believed to be due to obstruction within the tubes and of these the majority are the result of a gonorrheal salpingitis. The most common factor also in the second group is adhesions, due to a preceding gonorrheal pelvic peritonitis. The reason, probably, for the small percentage of interstitial pregnancies is that this portion of the tube has few mucous folds and is rarely involved in a gonorrheal salpingitis.

Diagnosis. A typical case of ectopic pregnancy presents a definite symptomatology with which the reader is familiar. Brady states that the history may often give a clue to the differentiation between the interstitial and the other types. In the interstitial type there is usually a history of amenorrhea in distinction to the usual spotting in the other types. This amenorrhea is due to the fact that the fetus is in an environment more like that in a normal pregnancy and can, therefore, survive for a longer time than if it were located nearer the exit of the tube. The walls of the gestation sac are formed of uterine tissue, and hence pregnancy can proceed to a more advanced stage than in the other types of tubal pregnancy. When the sac does rupture, a large and fatal amount of blood may be lost before operation is possible. In the case here reported there was a history of complete amenorrhea.

Treatment of extrauterine pregnancy is surgical either before or after rupture, the ideal being diagnosis before rupture while the patient is in a condito offer the minimal risk. Diagnosis before rupture may be made in the great majority of cases, if one will keep this possibility in mind in examining any woman in the child bearing age who has had any deviation from her normal menstrual cycle.

A ruptured ectopic pregnancy is a real surgical emergency. Many authorities formerly thought it best to wait until the patient has recovered some from her shock, since very few die from the initial hemorrhage, and some are still of this opinion. However, the consensus of opinion now is that immediate operation is best, since we have no way of telling when hemorrhage may start again. Stimulation should be withheld until the abdomen is opened and the hemorrhage stopped, since fluids given beneath the skin or intravenously may raise the blood pressure sufficiently to dislodge the blood clot and allow fresh hemorrhage.

Just as soon as the bleeding point is secured stimulation may be started. Blood transfusion is the ideal but not always possible as the preparations are somewhat time consuming, and it may not be possible to secure a suitable donor. Unmatched blood should never be given. The great need of these patients is fluids which may be given intravenously in the form of a 20 to 40 per cent glucose solution or normal saline beneath the skin. Coffee may be given per rectum. The foot of the bed should be elevated and the patient surrounded with hot water bottles. Morphine should be given in sufficient quantities to put the patient at absolute rest. So far as the operation itself is concerned, there is no need to say anything here except to urge that these patients should have as little done as possible, since they are in no position to withstand any great operative shock, and the less time they are on the table adds just so much to their chances for recovery.

REPORT OF A CASE

A young female, 25 years of age, who gives the following complaint: (1) pain in abdomen, (2) nausea and vomiting, (3) attacks of fainting.

Onset and course. Day before yesterday morning (Dec. 1) patient was taken suddenly ill with severe generalized abdominal pain, was nauseated and vomited twice within two hours. She lay down for a few hours, after which she felt better and returned to her housework for the remainder of the day. The following morning (yesterday) she had a similar attack of abdominal pain and fainted. The pain continued throughout the day, the patient vomited several times and again fainted. Early in the evening a doctor was called who gave her a hypodermic, and she was fairly comfortable the remainder of the night.

This morning the pain returned and she again fainted. Feeling no better by afternoon the doctor was again called and upon his recommendation she was transported eighty-five miles in an automobile to Lewiston, the nearest hospital. She has taken very little food for the last seventy-two hours, bowels have been moving freely as the result of several harsh cathartics. She has been married six years; has not been pregnant.

Menstrual. Has always menstruated regularly, twenty-eight day type; always has rather severe cramps. Last period was during the first week of October. Did not menstruate in November but had mild cramps for several days and since early in that month has had morning sickness; therefore, she considered herself pregnant. Family history is essentially negative throughout.

Physical examination shows a rather thin young female in acute abdominal pain and considerable degree of shock. Skin is pale and clammy, extremities cold and expression anxious. Pulse 140, regular, but of poor quality; respiration 30 per minute, sighing in character. The entire abdomen is distended, with marked tenderness over entire lower portion. No muscular rigidity noted except in flanks, where it is quite definite; flatness to precussion in flanks extending almost to midline; upper abdomen is tympanitic. Cullen's sign not noted. Remainder of physical examination is essentially negative.

A diagnosis of ruptured ectopic pregnancy was made and laparotomy performed. Abdomen was opened through midline incision and the entire pelvis and lower abdomen was seen to be filled with blood and old blood clots. On exposing uterus and tubes, both tubes were intact, but on the posterior superior surface of the uterus near the right cornu there was a jagged hole about two centimetres in diameter, extending through entire thickness of uterine wall, exposing the mucous surface. On closer examination this "blow-out" was seen to have occurred at the inner portion of the interstitial portion of the tube.

The fetus was not identified among the mass of blood clots which were removed as rapidly as possible. The placental remains were removed from the uterus, and the opening in it closed with three tnree interrupted chromic catgut sutures. Just before the peritoneum was closed, a liter of normal saline was poured into the peritoneal cavity; the abdomen was closed in layers, no drainage. Due to the critical condition of the patient, speed was most essential and the operative procedure was completed in twenty minutes.

Before the patient left the surgery she was given two liters of normal saline in the vein and beneath the skin. Upon returning to her room she was kept as warm as possible, the foot of the bed was elevated, and she was given two more liters of normal saline beneath the skin during the next twenty-four hours. By the end of twenty-four hours she had recovered from her shock, and had entered upon a postoperative course which was tedious and slow, otherwise uneventful. She left the hospital December 30.

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CANCER OF THE CERVIX UTERI

THE VALUE OF BIOPSY MATERIAL FOR PROGNOSIS AND TREATMENT*

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For years surgeons and pathologists have tried to correlate the histologic structure of malignant tumors with varying clinical results obtained in patients on whom operations had been performed. The subject has indeed been alluring and also fruitful, as is borne out by our present knowledge concerning the varying degrees of malignancy possessed by different cancers as indicated by the predominant type of cancer cell composing the parent tumor.

Insofar as this subject concerns cancer of the cervix uteri there have been varying opinions, most of which until recent years were of a character opposing any relation between cancer cell structure and the relative malignancy of the parent tumor in patients treated by operation.

Studies of cancer cell morphology are of long standing and have resulted in complicated classifications of cancer cells of various types. However, no clinical application of these studies was made insofar as attributing varying degrees of malignancy to neoplasms composed of cells of different types. In the admirable monograph of Schottlaender and Kermauner[1] the authors classify their epidermoid cancer cells into three widely quoted histologic groups viz: ripe, middle-ripe and unripe.

They also make the observation that among the epidermoid cancers the unripe variety (corresponding to our mixed spindle- and transitional-cell groups) show a greater degree of invasivness (p. 689) than the other types. No study is made, however, to show any difference in malignancy between the different types.

More recently it has been shown[2,3] that in cancer of the cervix uteri a rather definite relation exists between the types of cancer cells composing equally advanced cervical neoplasms and their malignancy as judged by the curability of these patients by operation. Prior to these determinations radium had become widely used as a therapeutic agent for cancer of the cervix. Study of biopsy material and specimens removed by radical operation before and after the use of radium soon yielded interesting information. In brief this was to the effect that: (1) the occurrence of certain inflammatory cell phenomena about radiated cancer indicate a greater

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* Read before the Fifty-fourth Annual Meeting of Oregon State Medical Society, Portland, Ore., Sept. 20-22, 1928.

TABLE I.
Showing relationship between curability and the occurrence of eosinophilia in radiated cancer tissue.

Predominant Cell Type of Cancer	Late Results (Five years after treatment) in early cancers where the disease is limited to the cervix			
		No. of patients	No. showing eosinophilia	No eosinophilia
Ripe	Cured	5	4	1
(spinal-cell)	Died	1	1	0
Middle ripe	Cured	8	4	4
(transitional-cell)	Died	4	0	4
Unripe	Cured	2	2	0
(spindle-cell)	Died	1	0	1
Total		21	11	10

Total number of patients cured	15
Number of patients with eosinophilia cured	10 or 66.6 per cent of 15
Number of patients without eosinophilia cured	5 or 33.3 per cent of 15

or lessened susceptibility of the neoplasm to radium; (2) cancer cells showing certain degenerative phenomena are more susceptible to radium, and; (3) cancers composed of certain predominant cell types react differently to the action of radium.

The occurrence of certain inflammatory cell phenomena in radiated cancer has been noted by Alter[4,5], Lahm[6], Schoch[7], Böhm and Zweifel[8], and others. Briefly these observers (excepting Alter whose work did not consider clinical end-results) find that in cases where an eosinophilic cell infiltration of the connective tissue about the cancer occurs following radium treatment, the percentage of cures is practically double that obtained in cases where no or only a slight eosinophilia occurs. The following Table I, from Lahm's article, illustrates his observation, and in a general way the observations of the authors mentioned.

The various stages of disintegration through which cancer cells pass after injury with radium emanation are well known. Here one commonly encounters vacuolization of nucleus and cytoplasm during the first week after radiation. Recently, however, some investigators, such as G. Döderlein[9], Böhm and Zweifel, and others are of the opinion that cancer cells which show a regressive metamorphosis in the form of vacuolization are more susceptible to raying than cancer cells not undergoing this change (fig. 1).

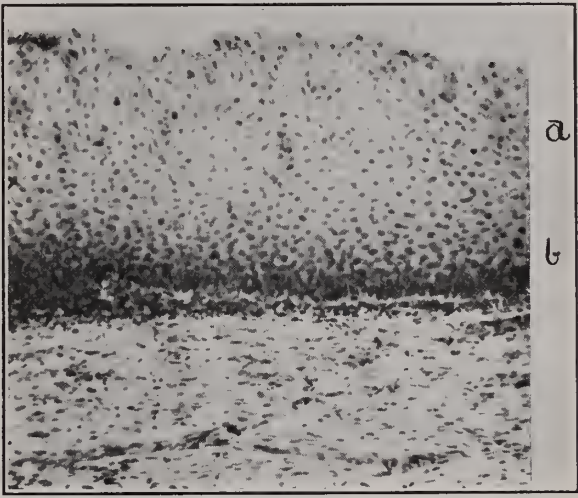

Fig. 1. Normal cervical epithelium. At "a" are the so-called spinal cells with distant cell membranes and abundant pale eosin staining cytoplasm. At "b" are the so-called transitional-cells, where no distant cell membrane is seen, the cytoplasm is less abundant and all portions of the cell take a deeper stain.

Finally the question arises as to the significance of the morphology of cancer cells insofar as indicating their susceptibility to radiation treatment. It has long been accepted that cancers composed of the so-called undifferentiated cells are, according to the work of Bergonier and Tribondeau, particularly radiosensitive. Alter in his careful observations has shown how readily the undifferentiated type of cancer cell disappeared under radium exposure, while the spinal-cell (the so-called ripe or differentiated cell) cancer with keratinization showed a definite ability to persist. Lahm[10] in a recent communication comes to the conclusion that the reaction of unripe or immature cancer cells is somewhat slower and incomplete as compared with the "ripe" (spinal-cell) cancers. However, the general concensus of opinion among radiologists is that cancers composed of the more immature appearing cells are decidedly more susceptible to radiation therapy than are those composed of the more mature appearing cancer cells viz: spinal-cell cancer.

Since it has been shown that there is a close relationship between the predominant type of cell composing a cervical cancer and its malignancy, as judged by its invasiveness and curability by operation, radiologists have tried to find a similar relationship in cancers treated by radium. However, when one comes to consider the late results from radiation therapy in the spinal-(ripe) transitional-(middle-ripe) and the spindle-cell (unripe) cancers, one is confronted by less uniform findings than in the case of determining the actual radiosusceptibility of a certain type of cancer cell.

Pomeroy and Strauss[11,12], in the epidermoid cancers of the cervix uteri, have obtained their best results with radium in the spinal-cell type, though they have noticed a remarkable temporary improvement in the transitional-cell cancer. Kimbrough and Norris[13], Gagey[14] report a similar experience. Schmitz, Hueper and Arnold[15] in a combined study of cancer cell types and various other factors have evolved a malignancy index for their radiated material which apparently shows their best results in the spinal-cell type of cancer. Lahm also apparently finds the maturer types of cancer cells more amenable to radium. Cordua[16] also is of the opinion that his best radium results are obtained in cancers composed of the more differentiated types of cells. However, his patients at the time of his report had been under observation too short a time to render value to his conclusions.

On the other hand, Regaud[17], Böhm and Zweifel, and others obtain their best results in cancers composed of immature cells, corresponding to our transitional- and spindle-cell types. Especially interesting in this respect is the recent study by Healy and Cutler of the Memorial Hospital, wherein they report particularly favorable results in advanced cervical cancers composed of cells corresponding to our transitional- and spindle-cell types. These they consider particularly radiosensitive. The following Table II, from the study of Healy and Cutler, illustrates their experience:

TABLE II.

Showing relation between prognosis and structural type in advanced cases of carcinoma of the cervix treated by radiation.

Cell Type	No. Cases	Cases Well	Per Cent Cured
Adult (spinal)	25	1	4
Plexiform (II) transitional	102	15	14
Anaplastic (III) spindle	33	14	42

(Healy and Cutler., Am. Jour. Obst. and Gynec. July, 1928, xvi, 15.)

The histologic studies of these workers are made on biopsy specimens which represent relatively small segments of the entire tumor. From such necessarily limited material is determined the predominant type of cancer cell composing the parent tumor. On such a basis, due consideration being given to the clinical local extent of the disease, these radiologists have felt able to judge of the apparent malignancy of the uterine neoplasm and with a fair degree of accuracy to anticipate the outcome in patients treated by radium.

This particular study was, therefore, undertaken to ascertain the degree of resemblance between cancer cells observed in small pieces of tissue obtained for diagnostic purposes and the cancer cells observed in numerous microsections obtained from various portions of the parent tumor. Such a determination would appear timely, since radium in some clinics is being used exclusive with surgery for cancer of the cervix uteri, which means that the entire parent tumor no longer becomes available for study. Also in cases where radium is used as a preoperative measure the appearance of cancer is sometimes so altered in the operatively removed uterus that the question arises as to how accurately biopsy material reflects the cytomorphology of the parent tumor.

A brief recapitulation may not be amiss to summarize the published work previously referred to. This conucerns itself with the demonstration that epidermoid cancers of the cervix uteri can generally be grouped according to the predominant type of cancer cell composing the tumor. We were able, in our previously reported studies, to recognize three fairly distinct cell types in our cancer material. These were designated as *spinal, transitional* and *spindle* types of cancer cells. As has been previously noted, all combinations of cell types occurred, but irrespective of the occurrence of other cell types we were able to show that the predominant type of cancer cell indicated the relative malignancy of the tumor, on the basis of its curability by operation. Our findings as compared with those of Broders' are summarized in the following Table III.

A brief description of the cancer cells described in our earlier study is as follows:

The *spinal type of cancer cell* resembles the cells seen in the superficial portion of normal stratified cervical epithelium, being polyhedral in shape, with a well defined cell membrane and a fairly large nucleus. The nucleus assumes only a moderately intense hematoxylin stain, while the cytoplasm which

TABLE III.

Percentage incidence of "five year cures" for the different types of epidermoid cancer of the cervix uteri.

	Johns Hopkins Hospital (Martzloff) Percent	Mayo Clinic (Broders personal) communication) Percent
Spinal-cell cancer Grade 2 of Broders	47.00	53.33
Transitional-cell cancer Grade 3 of Broders	24.2	21.5
Fat spindle-cell cancer Grade 4 of Broders	9.5	9.52

(Operative prognosis-Cancer of Cervix (Martzloff) J. H. H. Bull, March, 1927.)

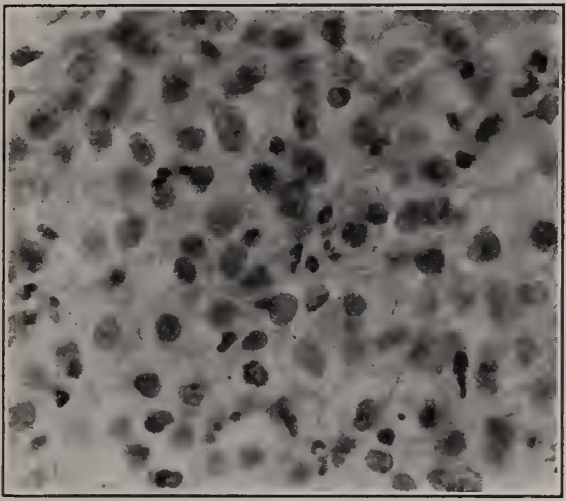

Fig. 2. Spinal-cell cancer.

is abundant takes a rather pale eosin coloration (fig. 2).

The *transitional type of cancer cell* resembles somewhat a more deeply situated group of cells seen in normal cervical epithelium. These cancer cells have a very faint or indefinable cell membrane, while the cytoplasm is less abundant and more deeply staining than in the spinal type of cancer cell. The nuclei take a deep hematoxylin stain and generally have nucleoli (fig. 3).

The *spindle type of cancer cell* is, as its name implies, spindle shaped. For the sake of brevity this description will suffice, for it serves to identify the cell type under consideration (fig. 4).

In a more recent study[18,19] we have shown the factors that apparently govern operability in the various cell types of cancer and have indicated the prognosis that may be anticipated in operative cases from a consideration of the clinical aspects and an adequate study of the pathologic specimens. Table IV briefly summarizes these deductions.

If one wishes to apply the above data to the pathologic evidence obtained from biopsy material, it then appears essential to know how valuable such material may be in its ability to reflect the cytomorphology of the parent tumor.

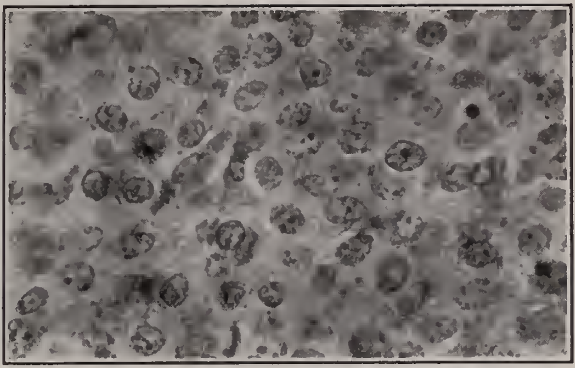

Fig. 3. Transitional-cell cancer.

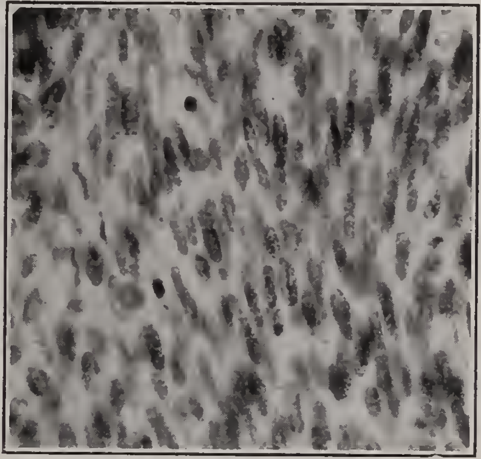

Fig. 4. Spindle-cell cancer.

For the purpose of this study we had seventy specimens removed from patients who were on the gynecologic service of The Johns Hopkins Hospital. All of these patients had unmistakable cancer of the cervix uteri. In each instance was tissue removed from the cervix either several days prior to or immediately preceding the major operative procedure. The local removal of tissue was followed by immediate radical cauterization of the cervix in practically every patient.

As in our previous publications, we are again designating these cancers by the predominating variety of cancer cell viz: the transitional-cell, spinal-cell and spindle-cell groups. In addition, for this study, we have segregated a fourth group, in which the spinal and transitional cancer cells occur in about equal proportions. This latter group in previous reports has been incorporated with the transitional-cell group in order to simplify what might otherwise have become a cumbersome division of material and, I might add, has served to

TABLE IV.

The prognosis that may be predicted in patients surviving operation, when consideration is given the factors governing operability and the predominant type of cell composing the cancer is shown in the following table.

Type of Cancer	Number of cases	No. Histologically or Chronologically beyond scope of permanent cure (inoperable)	Number operable	Number cured	Percent of operable cases cured
Spinal-cell	30	8	22	14	63.6
Transitional-cell	90	44	46	18* (22)	39.1* (47.8)
Spindle-cell	17	10	7	1	14
Total for epidermoid cancers	137	62	75	33 (37)	44 (49.3)
Adenocarcinoma	9	5	4	3	75
TOTAL	146	67	79	36 (40)	45.5 (50)

* To this number might well be added four other patients who were operable and died or were lost 7, 8 and in two instances 10 years after operation without evidence of recurrence. This would then yield the results indicated by the bracketed numerals (Martzloff, S. G. and O., Aug., 1928).

swell the number of cures in the transitional-cell type of cancer.

Under the four above mentioned groups the biopsy material and the corresponding parent tumor have been compared as to their content of various cell types, the occurrence or absence of epithelial pearls, giant cells, nucleoli and mitotic figures. Finally, the general histologic pattern was compared where sufficient tissue was present in the biopsy material to warrant such a contrast.

TRANSITIONAL-CELL CANCER

For our present study forty-three specimens of transitional-cell cancer were available. As we have previously reported, cancers in which this type of cancer cell is the predominating variety formed the great majority of malignant cervical neoplasms.

It will become apparent in the analysis of this material that, while the transitional-cell is the predominating variety, both the spinal- and spindle-cell types of cancer cells commonly occur with varying frequency. It would lead too far afield and afford complex data of questionable value to enumerate for these or the following groups of tumors the incidence with which other varieties of cells occur in noteworthy numbers. However, merely for illustration it can be said that of the forty-three cases in this group thirty-two (74.8 per cent) showed the spindle type of cancer cell in sufficient number to make it a factor in the histologic picture. In instances where cancer alveoli showed occasional peripherally situated spindle-cells in numbers so small as hardly to influence the histologic panorama, their occurrence was not noted. Had notation been made of these, then the above incidence would be entirely too small. The same may be said for the occurrence of spindle cells in association with spinal-cell cancer, though here the generalization cannot be so sweeping (fig. 5).

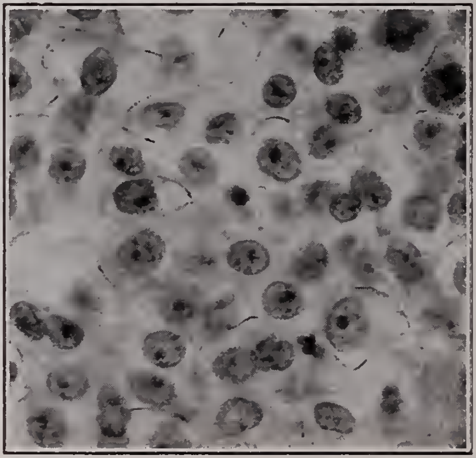

Fig. 5. Biopsy material showing spinal type of cancer cells. The cell membranes do not come out well so that some retouching has been necessary. Compare with fig. 6. Other areas show transitional-cell types in about equal numbers, so that from the biopsy it is impossible to decide as to the predominant type of cancer cell.

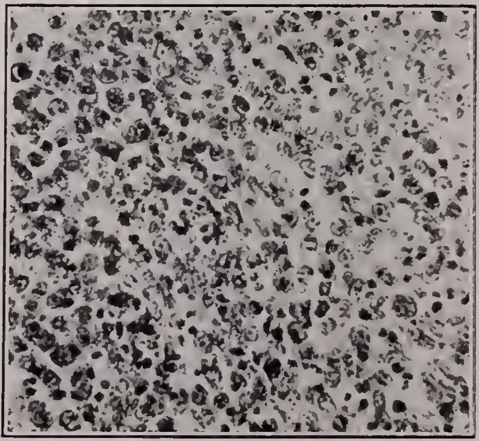

Fig. 6. Section from parent tumor, of which fig. 5 represents the biopsy. Cells practically all of the transitional-cell type, no definite spinal cells being seen in sections of the parent tumor.

TABLE V.

Transitional-cell cancer: 43 cases.

Biopsy showing predominance of spindle-cells	4
Biopsy showing equal number of transitional- and spindle-cells	5
Biopsy showing predominance of spinal-cells	0
Biopsy showing equal number of transitional- and spinal-cells	4

TABLE VI.

Showing distribution of epithelial pearls in eight cases of transitional-cell cancer.

	Number of Cases		
Biopsy	4	0	1
Parent tumor		3	0

On the other hand, no such generalization can be made for the association of spinal-cells in tumors predominately of the transitional-cell type. Here we found typical spinal-cells in seventeen instances (39.5 per cent), while in seven more specimens cells occurred that could questionably be classified as spinal-cells. In the latter specimens these cells had in many areas the general shape, the familiar relation between cytoplasm and nucleus and tinctorial properties suggestive of typical spinal-cells. A distinct cell membrane, however, was absent. From cells of this appearance to those regarded as typical transitional-cells every intermediate gradation can be seen.

In this, as in the previous studies, all cells not typical of the spinal- or spindle-cell varieties were classed as transitional-cells. In this manner the well-nigh hopeless task was avoided of trying to classify an endless variety of cells possessing slight morphologic or tinctorial differences.

In comparing the histologic picture presented by biopsy material and numerous microsections of the parent tumor obtained by operation we observed thirteen (30.2 per cent of 43) instances, in which the biopsy did not reflect the cytomorphology of the parent tumor. This is brought out in Table V. From the foregoing it is evident that in four instances the biopsy findings clearly and erroneously indicated a tumor of the spindle-cell variety, while in nine other instances it was impossible to distinctly define a predominant variety of cancer cell, though in each instance the parent tumor was composed of cancer cells predominantly of the transitional-cell type (fig. 6).

The foregoing table does not consider the occurrence of epithelial pearls, mitoses, giant cells or nucleoli. These have been considered separately in order better to evaluate the degree of similarity existing between biopsy material and the parent tumor.

Epithelial pearls were encountered in eight of the forty-three cases of transitional-cell cancer as shown in Table VI. From the foregoing it is seen that in only half of the cases showing epithelial pearls did the biopsy and parent tumor correspond in this same particular.

Mitotic figures were noted in the biopsy material and parent tumor of every specimen. As evidence of mitosis we accepted only nuclear changes characterizing the metaphase or anaphase of the karyokinitic cycle. Not infrequently the telophase could be readily identified where other mitoses were numerous, but by itself we did not consider this appearance sufficiently characteristic for identification in ordinary microsections. Possibly what we have termed the metaphase may be a stage in the prophase. However, we did not construe an irregularly rounded, pyknotic nucleus as definite evidence of mitosis, obvious as this might be to the experienced observer.

Giant cells either mono- or polynuclear were observed in 25 of these 43 cases. In only five instances did the biopsy and parent tumor material fail to correspond in this detail.

Nucleoli were observed in all but five specimens. In two of these the absence of nucleoli occurred in both biopsy and parent tumor material, while in the remaining three was there lack of similarity.

SPINAL-CELL CANCER

In the group of cancers where the spinal type of cancer cell predominates we have only six cases where biopsy material was available for comparison with tissue from the parent tumor. Table VI illustrates clearly the situation encountered in comparing the predominate cell types in biopsy and parent tumor material.

Deductions obtained from such a small number of specimens may be manifestly erroneous. However, it is seen that in one instance the biopsy indicated incorrectly the presence of a transitional-cell cancer, while in two instances a definite decision could not be made as to the predominant type of cancer cell.

Epithelial pearls were noted in three specimens. In one they were observed in both biopsy and parent tumor, in one in the biopsy and in the third solely in the parent tumor.

Mitoses were observed in both biopsy material and the tissue from the parent tumor in every instance.

TABLE VII.

Spinal-cell cancer (6 cases)

Biopsy showing predominance of spindle-cells.	0
Biopsy showing equal number of spinal- and spindle-cells	0
Biopsy showing predominance of transitional-cells	1
Biopsy showing equal number of spinal- and transitional-cells	2

TABLE VIII.

Showing distribution of giant-cells in 5 cases of spinal-cell cancer.

	Number of Cases		
Biopsy	1	1	0
Parent tumor		0	3

Giant-cells occurred in five of the six specimens, as shown in Table VII.

Nucleoli were uniformly present in biopsy and parent tumor preparations.

SPINDLE-CELL CANCER

For this study eleven specimens were available. In Table VIII are tabulated the biopsy findings in four specimens where, though the parent tumor is predominately composed of the spindle type of cancer cell, the biopsy findings are equivocal or misleading. In the remaining seven specimens the parent tumor confirms the biopsy.

It is seen from Table VIII that in four specimens (36.4 per cent of 11) the biopsy material did not reflect the predominate cell type of the parent tumor. In fact, in three of these specimens the biopsy indicated a pure transitional-cell type of cancer, for no spindle-cells were seen in this material.

One other case not included in Table VIII requires mention. In this instance the biopsy revealed an overwhelming number of spindle-cells, while study of the parent tumor showed about an equal incidence of spindle- and transitional-cells. Because of the biopsy findings this case was included in the spindle-cell group of cancers.

Epithelial pearls were observed in one case, occurring in both the biopsy material and the parent tumor. The biopsy in this instance accurately reflected the histologic appearance of the parent tumor.

Giant cells both mono- and polynuclear were observed in six of these eleven specimens. In this respect the biopsy material indicated their presence in the parent tumor.

Nucleoli were observed in all but two biopsy specimens. The parent tumor in one of these showed no nucleoli, while in the other specimen they were present.

TABLE IX.

Spindle-cell cancer (11 cases)

Biopsy showing predominance of transitional cancer cells	3
Biopsy showing equal number of spindle- and transitional-cancer cells	1
Biopsy showing predominance of spinal-cells	0
Biopsy showing equal number of spindle- and spinal-cells	0

TABLE X.

Transitional- and spinal-cancer cells occurring in equal numbers (10 cases)

Biopsy showing a predominance of transitional-cells	4
Biopsy showing an equal number of spinal- and transitional-cells	6
Biopsy showing predominance of spinal-cells	0

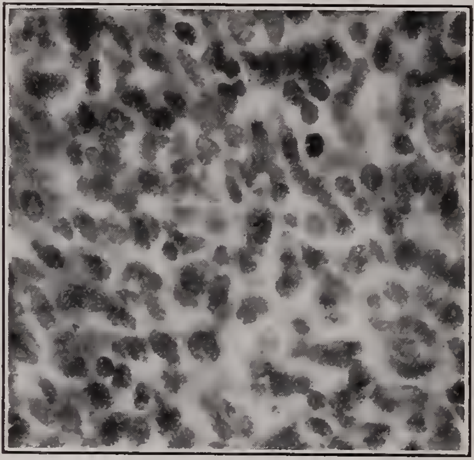

Fig. 7. Biopsy material, showing a predominance of the transitional type of cancer cell. Compare with fig. 8.

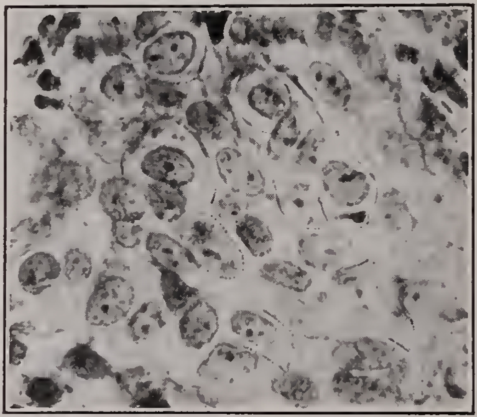

Fig. 8. Section of parent tumor, of which fig. 7 represents the biopsy material. This section shows a predominance of the spinal type of cancer cell which is the predominant cell type throughout the tumor. Retouching necessary to bring out cell membranes in photograph.

SPINAL- AND TRANSITIONAL-CELL CANCER

In this group are included ten specimens in which spinal- and transitional-cell types occurred in equal proportion in the parent tumor. It may be noted that spindle-cell types were also noted in some of these specimens but in such small numbers as hardly to influence the histologic picture (figs. 7 and 8).

In Table IX are tabulated the biopsy findings insofar as cell type is concerned in these ten specimens.

From the foregoing it is seen that the biopsy material indicated a predominance of transitional-cells, in four (40 per cent) of the ten specimens, while in the remaining six the biopsy findings correspond to the parent tumor histology.

Epithelial pearls occurred in three specimens. In one both biopsy material and parent tumor contained pearls, while in the other two their occurrence was confined to the parent tumor, none being found in the biopsy tissue.

Mitoses and nucleoli were noted in both biopsy material and the sections of the parent tumor of every specimen.

Giant cells were seen in all parent tumors and in all but two of the biopsy specimens.

SUMMARY

This study is based on seventy specimens of cancer of the cervix uteri obtained by operation at The John Hopkins Hospital. In each instance biopsy material was available for comparison with the histology of the parent tumor. The object of this study is to ascertain to what extent the cytomorphology of the biopsy material reflects the histologic picture of the parent tumor, insofar as the predominating type of cancer cell is concerned.

In forty-three specimens of *transitional-cell cancer,* study of the biopsy material revealed in thirteen (30.2 per cent) instances a histologic picture that did not satisfactorily reflect the cytomorphology of the parent tumor. In four of these thirteen specimens the biopsy material erroneously indicated a spindle-cell type of cancer and in the nine remaining specimens it was impossible to define a predominant variety of cancer cell.

In six specimens of *spinal-cell cancer* it was impossible from a study of the biopsy material to definitely determine the predominant cell type in three (50 per cent). In one of these the biopsy incorrectly indicated a transitional-cell cancer.

There were eleven specimens of *spindle-cell cancer* available for study. In four of these (36.4 per cent of 11) the biopsy material did not indicate the predominant cell type of the parent tumor.

In the group of cancers where the spinal- and transitional-cell types occurred in about equal proportions, it was found that the biopsy material in four (40 per cent) of the ten specimens available for study did not bear out the findings in the parent tumor in that they indicated a predominance of transitional cells.

Observations were also made on the occurrence of epithelial pearls, mitoses, nucleoli and giant cells in both biopsy and parent tumor material.

CONCLUSION

From the foregoing observations it is permissible to conclude that in carcinoma of the cervix uteri a study of biopsy material will in about one-third of the material studied fail to indicate correctly the predominate variety of cancer cell in the parent tumor.

Therefore, any studies having biopsy material as their sole basis, that attempt to vary the type of treatment or offer a prognosis based on the predominant type of cancer cell in cancer of the cervix uteri, face the problem of inaccuracy as stated in the preceding paragraph.

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ANALGESIA IN OBSTETRICS BY THE GWATHMEY SYNERGISTIC METHOD *

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The subject of analgesia is always dangerous ground upon which to advance in any meeting of medical men for the reason that patients react differently to various analgesics and the degree of relief of pain is hard to interpret in a given case. In a paper of twenty minutes duration one can only touch upon this large subject and it is to be regretted that the topic cannot be discussed more fully.

It is obviously the duty of every physician to alleviate the pain of childbirth to the utmost that is consistent with the safety of the child, and sometimes he must assume a definite risk to the life of the child in order to give this relief. Many mothers think that the modern physician is callous to her suffering and resent this attitude. If this appears to exist, it probably arises from a belief that pain cannot be prevented without greater danger to the child than circumstances would justify.

The modern woman demands relief from pain during childbirth. In the primipara this relief is most essential because, whether or not she gives birth to another baby, often depends upon her relief of pain during the first labor. Severe pain is not essential to childbirth. Satisfactory relief is usually possible but it requires careful study of the individual case and frequently adaptation of various methods. No method of inducing analgesia is suitable for universal use.

So-called "painless childbirth" is often a very difficult problem. Every method of relieving pain involves immeasurable risk to the child, when used by one who has not acquired skill and the proper technic, but with methods now in use there is no longer any need for the "old time sound-proof labor room." The comfort of the mother often conflicts with the safety of the child. In all such cases the obstetrician must decide what is best according to sound judgment, experience and the dictates of his conscience. It may be the nervous temperament of the modern woman that makes her suffer more than formerly.

In February, 1923, Dr. James T. Gwathmey, in association with Dr. Asa B. Davis, chief surgeon of the New York Lying-in Hospital, worked out the method that is now known as the Gwathmey synergistic analgesia in obstetrics. According to Gwathmey, "this method was undertaken from a purely scientific and altruistic viewpoint. It should be so simple that it can be used in the home or in the hospital by any physician. The ideal sought was a state of relaxation and analgesia with consciousness but little if at all impaired, so that free cooperation might be had at all times." The method was based on the ether and oil method of rectal anesthesia which had been used for a number of years in surgery, and it was perfected after experimentation with numerous formulæ and after considerable animal experimentation. It was used in several hundred cases of childbirth in the New York Lying-in Hospital before it was announced to the profession. The advantages claimed for the method were, "that it was effective for relief of pain in 85 to 90 per cent; the drugs used were common, the technic was simple, no trained personnel was necessary; it could be used in the home or hospital by any practitioner; and above all, the method was safe for the baby and mother." No claim was made that it was "painless childbirth." The effect produced is analgesia and not anesthesia.

Obviously time will not permit giving the technic of this method in detail. Those who are not familiar with it may easily become so by looking up the literature. In brief, the method consists of giving an intramuscular injection of morphine, grains 1/4, with 2 c.c. of a 50 per cent solution of magnesium sulphate, followed in twenty minutes by another injection of magnesium sulphate and in one-half hour or more by a rectal instillation of two and a half ounces of ether, 20 grains quinine with olive oil to make four ounces. The instillation may be repeated after two and a half to four hours, if the effects wear off before labor is terminated. In a long labor the whole process may be repeated, providing delivery is not due within several hours. There are many variations to this technic, depending upon the individual case. One must be familiar with all the details and follow them carefully. Most unsatisfactory results are due to improper technic.

After carefully studying the technic and the claims for this method, I began the use of it in 1924, as it seemed to me to come nearer to the ideal for a safe method of analgesia than any so far perfected. After using the method for one year, I reported my impressions and results to this society at the annual meeting in September, 1925. I also reviewed all the literature up to that time and recommended the method as measuring up to all that Gwathmey and Davis had claimed for it.

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* Read before the Fifty-fourth Annual Meeting of Oregon State Medical Society, Portland, Ore., Sept. 20-22, 1928.

Since 1925 I have used this method continuously in my obstetric practice and it seemed to me that a discussion at this time of my impressions and experiences during the past four years would be of value to you. Also that a review of the literature which has accumulated in the past five years would also be of value. The purpose of my paper is to show what the present status of this method is and to give you the advantages and disadvantages, the indications and contraindications and precautions to be observed.

To this end I addressed a questionnaire to one hundred and eighty leading obstetricians of the country. These men were all Fellows of the American College of Surgeons and every state and city of any size was represented. Also the heads of the departments of obstetrics in all the leading medical schools of the country were included. I thought these replies would be representative of the most careful and better trained obstetricians of the country. One hundred and twenty replies have been received to date. Many of these answers were accompanied by very complete letters and many reprints on the subject were sent. I also received a lengthy personal letter from Dr. Asa Davis, Dr. Gwathmey, and many others. I wish at this time to express my appreciation of the cooperation of the men who filled out these questionnaires.

RESULTS OF THE QUESTIONNAIRE

Question number 1 was, *"What experience have you had with this method?"* Eighty-seven per cent of those who answered were using the Gwathmey method and reported their results. Thirteen per cent had not used the method. Seventy-four per cent had used it in 50 cases or more. The average number of cases per obstetrician was about 500 to 600, enough to warrant some opinion as to results. Two reported 1,000 cases each. One reported over 10,000 cases. Many had used the method since it was originated. The average length of time used was about three years. At the University Hospital, St. Louis, where the scopolamine method has been used for fourteen years, reports came "that the Gwathmey method is now being used alternately with scopolamine in every other case and comparisons made. The results so far are very favorable and we think the Gwathmey method is best for a labor of about eight hours duration and that the claims of Gwathmey for his method are substantiated."

The second question, *"What advantages has the method,"* gave the following results: Eighty-six per cent were very favorably impressed; 12 per cent found some degree of objection to it. Time will not permit mention of any of these numerous answers, but suffice it to say that the advantages claimed by Gwathmey were the ones which were mentioned. The majority of the answers were very favorable, many of them glowing in their praise of the method.

The third question was, *"What disadvantages has the method?"* Thirty-five per cent reported no disadvantages; 70 per cent cited various minor and a few major objections; 16 per cent reported some rectal irritation occasionally. Four of these were reported as colitis. Twenty per cent reported some degree of uterine inertia, in most cases not serious. Twelve per cent reported some respiratory sluggishness on the part of the baby, but no case was pronounced or could not be easily resuscitated. Nine per cent reported some excitability of the mother at times.

The answers to question number 4, *"Do you know of any bad results following the method?"* showed that 70 per cent had no bad results; 10 per cent reported some prolongation of labor; 9 per cent irritation of the rectum; 7 per cent some degree of asphyxiation of the baby. Prolongation of labor did not lead to serious complications and mild asphyxiation of the baby was overcome in all cases. No fetal death as a result of the method was reported. One maternal death was reported, in which chloroform was superimposed upon the Gwathmey analgesia. This is distinctly warned against by Gwathmey and is a serious error in technic.

In answer to question number 5, *"How does the method compare in the average case with the scopolamine 'twilight sleep' method,"* the following was reported: Ninety-two per cent answered that they very much preferred the Gwathmey method. Eight per cent preferred the scopolamine method. A few reported combining the two methods and a few preferred one method or the other, depending upon the type of case. Eighty-four per cent of those using the Gwathmey method reported it to be a much superior analgesia. Thirty-five per cent reported that it is much safer for the baby and the mother.

A few individual reports were as follows: Spaulding of San Francisco, "Gwathmey is far safer as a routine." Hirst of Philadelphia reported the method much superior to twilight sleep, with which method he had had much experience in former years. The University Hospital at Ann Arbor, Michigan, reported, "Gwathmey method much better for the baby." Lynch of California says, "Twilight sleep is not adapted for general use." Sollman reports, "If scopolamine method is justified at all, it should be used in a specially equipped institution and not in private practice or in an ordinary hospital."

The sixth question, *"Do you think this method will come into general use? Is its use increasing,"* showed the following: Thirty-six per cent thought it would come into general use; 62 per cent thought its use was increasing. A number reported that patients were requesting it. Hirst said, "The method is increasing and will come into general use."

The seventh question, *"What do you consider the best method of analgesia by the average practitioner in the hospital and in the home,"* showed the following: There were as many different replies as the number of those questioned. There was every conceivable answer with all possible combinations of various analgesics and anesthetics, and it is impossible to tabulate these replies. One-half of the replies, however, were to the effect that the best method for use by the average practitioner in the hospital was the Gwathmey, in whole or in part. The answers differed as to primipara, multipara, first stage, second stage, short or long labor or operative deliveries. There were very few who mentioned chloroform or the scopolamine method.

In answer to question number 8, *"Would you advise any modification of the usual technic of this method,"* 50 per cent recommended no change; 11 per cent recommended leaving out the magnesium sulphate; 10 per cent suggested that scopolamine or hyocine be added to the initial hypodermic in place of the magnesium sulphate; 7 per cent stated that one should individualize each patient as to what part of the Gwathmey method should be used and when; 7 per cent recommended the use of nitrous oxide and oxygen or ether during delivery of the head; 4 per cent recommended varying the dose of the drugs with the size and weight of the patient. Harrar, of New York, who reports 10,000 cases, says a single dose of 1/200 grain of scopolamine is better with the initial hypodermic than repeating the magnesium sulphate. Lynch has a series of cases, in which dial has been substituted for the morphine with good results and perhaps more safety. McNeille of Los Angeles has also substituted diallylbarbarturic acid for morphine in the first stage.

COMMENT ON QUESTIONNAIRE

Summing up the data obtained from this questionnaire, it is found that 87 per cent are using the method, most of them over a period of a number of years. Many of them offer suggestions and cite precautions to be followed, one of the chief admonitions being to individualize each patient. Eighty-six per cent of those using the method were favorably impressed. It is interesting to note that these were the larger users over a long period of time. The advantages claimed were the same as those claimed by the originators of the method, namely, that it was reasonably safe, effective in 85 to 90 per cent of the cases, simple, without complicated apparatus, easy technic, and can be used in the home under ideal conditions.

It is the consensus of opinion that the method is best adapted for use in the primipara, especially in the long first stage. Of interest is the fact that no large user over a long period reported unfavorable results. Many thought the method to be the most outstanding advance in obstetrics in the last twenty-five years and better than any other method so far perfected; that it could be used by any intelligent practitioner who would learn the technic, gain some experience and select his cases.

A goodly number reported some minor and major disadvantages, such as rectal irritation, uterine inertia and respiratory sluggishness of the baby. If contraindications are observed and care used in selecting cases with proper technic, these disadvantages should not be a serious handicap. Uterine inertia may result from starting the method too early or repeating the method, or giving morphine or ether too late in labor. Multiparæ often have too short a labor for the use of this method. Too much inhalation anesthesia at the end of the second stage may cause asphyxia of the baby.

Lynch sums up his experience by saying the method should not be used routinely or blindly and that it may prolong labor to some extent, but that a longer labor without undue suffering and shock is better for the patient than a shorter labor with severe suffering. The majority of deliveries in primiparæ demand light gas or light ether anesthesia for episiotomy or delivery of the head. No chloroform should be superimposed upon the analgesia. Cooperation of the patient must be had throughout. The obstetrician must develop a good technic, sound judgment and skill, and must individualize his patients. It must be remembered that complications, such as uterine inertia, fetal asphyxiation, etc. may be due to other causes than the use of the drugs.

Seventy per cent knew of no bad results following the method. There were no serious results reported, even if labor was slightly prolonged. No baby was asphyxiated beyond resuscitation and there was not a single report of a fetal death which could be in any way charged to this method. The larger users reported the least number of bad results, showing that proper technic and proper selection of cases has a great bearing.

Compared with twilight sleep 92 per cent of these men, who are competent to judge and many of whom have tried both methods, preferred Gwathmey's. The reasons were that this was safer for the baby and mother, better analgesia, easier to administer; the patient did not need watching so carefully; there was less asphyxia to the baby and less uterine atony, also it was much better in the hands of general practitioner and much better for routine use. A few preferred the twilight sleep method in the multipara or during the second stage of the primipara. Sixty-two per cent thought the method was increasing and many said it should increase and many patients asked for it.

As to the best method for the average practitioner the questionnaire seems to show that there is no best method. There were no uniform replies to this question. However, 50 per cent said the Gwathmey method was best for the general practitioner, if properly used in selected cases. The majority of those who did not recommend the Gwathmey said that morphine in the first stage, with nitrous oxide and oxygen or ether for the second stage was the best in the hospital and that ether was the best in the home.

As to modification of the method, 50 per cent recommended no change. Most advised individualizing and not following a routine in every case. Many ended labor with gas or ether. Some used part of the method only, such as the ether and oil instillation. Some suggested that the dose of the drugs should depend upon the weight of the patient. Others recommended reducing the dose of quinine or using care in repeating it. I might add that in Gwathmey's latest formula the quinine is reduced to 15 grains and 10 grains of chloral hydrate is added. This should overcome somewhat any untoward effect of the quinine, and the chloral should help to eliminate any possible excitement of the mother in the few cases where this occurs.

OBSERVATIONS REGARDING THIS METHOD FROM A REVIEW OF THE LITERATURE AND FROM PERSONAL EXPERIENCE

Inasmuch as all writers emphasize the importance of the proper technic, I wish briefly to mention a few details which, unless carried out properly, will mar the results. First of all, the method should not be started too early. The pains must be regular, with three to five minute intervals and lasting at least forty-five seconds. If delivery is to take place within two hours, morphine should not be given. In case of a woman of less than average weight 1/6 grain morphine should be used instead of 1/4. The drugs must always be given with a one and one-half inch needle, deep in the muscle. The ampule should be sterilized, the skin painted with iodine and the needle inserted at right angles. The best location is the gluteal muscles. Never give the hypodermic in the side of the thigh through the fascia lata or subcutaneously, as there is danger of abscess formation.

The surroundings of the patient are important. She should be in a quiet room with lights dimmed. There should be no talking. Her eyes should be bandaged and her ears plugged. Tell her the purpose of the method and the expected results. If relief is had from the initial hypodermic, nothing more need be done until pain again becomes severe when the ether and oil instillation is given. This should never be given within one hour of the first hypodermic and may be delayed longer, if the patient is comfortable.

A cleansing enema should have been given on admission, preferably several hours before the retention enema. This should be followed by thorough irrigation of the bowel with warm water and all solution should be thoroughly expelled. Cooperation of the patient must be had. The buttocks should be greased with vaseline and the patient should be told how to retain the enema. The original technic called for the gravity method, using a catheter and funnel.

However, I believe the newer method, perfected by David L. Smith of Indianapolis, is an improvement. In this the apparatus consists of a number 20 F. catheter connected with a one ounce glass ampule of heavy mineral oil, and this connected with a four-ounce metal container of ether and oil which is connected with an ordinary rubber bulb. Only about two minutes is taken for this injection. The solution must be warm and all air must be expelled from the catheter. Slight smarting may take place for a few moments. The patient should be told to not bear down during a pain but to draw up. The rectum is held with a folded towel for from ten to twenty minutes after the injection and the patient advised not to bear down. The instillation is followed immediately by another hypodermic of magnesium sulphate. It is very important to follow the proper technic in giving this retention enema or it may be expelled. No rectal examination should be made within one hour if possible. The catheter should be assisted by the gloved finger in being inserted. Most writers recommend that the catheter remain in the rectum for a short time after the instillation. If the gravity method is being used the catheter may have to be "milked" in order to complete the injection.

The patient should be watched by some relative or assistant, lest she fall out of bed. Otherwise there is very little need of the presence of a trained assistant. The patient is never in the second stage of anesthesia but in the first stage or that of analgesia. The tongue is not relaxed and does not fall back in the throat and the patient is not entirely unconscious, but will answer questions if she is aroused.

The patient becomes quiet and sleeps between pains, perhaps turning over or moaning during a pain. Contractions continue as before, as can be determined by placing the hand on the abdomen. In fact, although a patient is quiet, labor may go on rapidly and the head come down on the perineum unexpectedly. It is possible that the patient might precipitate unknown to the physician, if she is not watched. The effect lasts four to five hours.

In the long primipara the instillation may be repeated from two and one-half to four hours after the first instillation. However, one must not use too much ether near the time of delivery, as this may cause some respiratory embarrassment on the part of the baby. With the primipara it is usually necessary to use a little gas or ether when the head is delivered. One of Gwathmey's strictest precautions is never to use chloroform for this purpose but very light ether inhalation or 50 per cent nitrous oxide and oxygen. To superimpose a strong anesthetic at this time will cause possible asphyxiation of the baby.

There is much amnesia with this method as well as analgesia. Many patients do not remember the birth of the baby. Also a conspicuous observation is that they have a very smooth convalescence. They rest and are quiet and free from pain for several hours after the delivery, although they are not unconscious. During the labor some patients may appear to be suffering considerably, yet if questioned twenty-four hours afterward will remember very little about the experience. This point should be remembered.

The patient should not be promised a painless childbirth, therefore she should not expect one, yet almost complete relief of pain is had in 75 per cent and considerable relief in 90 per cent, according to most writers. In multiparæ, where the labor is short, only the ether and oil instillation should be used. A great many will not suffer very much until near the end of the second stage, when inhalation anesthesia will be all that is necessary. The Gwathmey method keeps the patient comfortable for a good many hours, when otherwise she would be suffering intensely. There is less shock, better convalescence, and many writers say the cervix dilates more rapidly and better under this method.

The dose of ether in this method is one-half that used in rectal anesthesia in surgery. Gwathmey and his coworkers recognize only one contraindication to the use of their method, namely, rectal disease. It should never be used in the presence of fistula, fissures, colitis or severe hemorrhoids. Theoretically nephritis might be a contraindication but the originators use it routinely in the presence of nephritis, eclampsia and cardiac disease without untoward results. The method is very adaptable in the long labor of the primipara or the primipara with a rigid cervix. It allows nature to do her work effectively and by eliminating suffering the obstetrician is not tempted to rush in to some form of operative delivery which he might otherwise do. Practically all the objections can be eliminated, if the obstetrician thoroughly learns the technic, develops skill and experience, and individualizes his patients.

Beckman of Milwaukee and Hatcher of New York are the two leading critics of Gwathmey's work. These men are both pharmacologists and have had no experience with this method clinically. Their criticisms are on the ground of the pharmacologic action of magnesium sulphate. They dispute the statement of Gwathmey that magnesium sulphate is a synergist. Both Gwathmey and Beckman base their opinions upon animal experimentation and, although both have done considerable animal work, their results do not seem to agree on this point. It does not make so much difference in my estimation whether the effect is synergistic or not. Clinically the results are the same, and the usefulness of the drug is not altered.

Hatcher regrets the commercialization of the Gwathmey formula, for which he is to be highly commended. Gwathmey had no part in this and has done all he could to avoid it. Hatcher says, "The time is not ripe for such generalized and indiscriminate use of the method as will unjustly be encouraged by commercial exploitation to the profession of the Gwathmey formula under a nondescript proprietary name." With this I am in hearty accord. Hatcher closes his article with this very striking statement, "The most striking fact brought out in this review is the pressing need of systematic experimental study of the drugs used in labor and statistics, showing as accurately as possible the analgesic action for women and the toxic effect on the child." I believe Gwathmey's work has started us on this road and within the next few years we shall have an answer to this question, while in the meantime we shall be relieving our patients as much as is consistent with the safety of the mother and baby.

I wish to quote portions of personal letters received from Drs. Gwathmey and Davis.. Gwathmey says, "The reason for our statement that the method can be used by any doctor anywhere without danger is that we are using it constantly in the out-patient department of the Lying-in Hospital of New York. It is successful in every way in over 90 per cent of the cases. We have proctoscoped hundreds of cases and no bowel damage has been found. We have given 30,000 hypodermics of magnesium sulphate with eight abscesses, which is about the same amount that would occur with morphine and water without the magnesium sulphate.

"Tuberculosis, heart or kidney trouble, are not contraindications. Labor is not delayed in the large majority of cases. Sufficient animal experimentation and laboratory work has been done on the method to satisfy the most critical, provided they are honest and unbiased in their opinion. The permanent danger, if any, is superimposing an anesthesia upon the analgized patient. We have had over 10,000 cases to date in the hospital and, contrary to the effect of twilight sleep we have had no delay in labor and no asphyxiation of the baby and no deaths."

Dr. Davis, Chief Surgeon of the New York Lying-in Hospital, states, "I have yet to find one of the doctors or nurses who would advise discontinuing this method. As one might expect, the results are not uniform. This is because the patients themselves are not uniform nor are the labors. The number of failures is very small. We have yet to see any symptoms of danger insofar as the mother is concerned. The number of cyanosed or asphyxiated babies has not increased since we began to employ this method.

"A superimposed anesthesia by an inexperienced anesthetist carrying it to the full surgical degree constitutes danger to the respiration of the baby. We have had no fatalities from this cause. We are working with modifications of the method and our endeavor is to get out a 'fool proof' formula if possible. I have used the method in several cases of diabetes, toxemia of pregnancy just short of convulsions, and in cardiac decompensation without any harmful results."

In closing, I am indebted to Dr. L. M. Miles of St. Paul, for the following statement of an ideal obstetric analgesic: "(1) Complete absence of the sense of pain to the patient, (2) ease of administration, (3) no requirement of cooperation on the part of the patient, (4) single dose administration that will insure no pain for eight to twelve hours, (5) complete safety to the mother and child, (6) no increase in the normal delivery time, (7) while not interfering with the strength of the labor or uterine contractions it should favor relaxation of the cervix and the pelvic floor."

Needless to say, this ideal has not as yet been reached, but I believe that Gwathmey and his associates have brought us nearer to this goal and that in the future, although childbirth will probably never be entirely painless and while no method will ever be without some danger, we shall be brought much nearer to this ideal.

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EDITORIAL

PORTLAND AS A MEDICAL CENTER

During recent years Portland has made rapid strides toward becoming the medical center of the Pacific Northwest. Because of its strategic location the City of Roses has long been the center of activity for lumbering, wheat and other basic industries of the Northwestern states. This tendency is making itself felt in other fields and particularly in that of medical education and federal medical service.

Marquam Hill, a beautiful wooded area of one hundred and eight acres in the west hills, is the seat of Portland's medical center. It is a site of exceptional scenic grandeur, offering an inspiring view of the city, the Willamette river and the snow capped mountain peaks to the north and east. Located within a mile of the business section of the city and yet isolated from the inevitable noise and smoke of all urban centers, Marquam Hill is an ideal medical school and hospital environment.

The Medical School of the University of Oregon is the first of the Marquam Hill group. Two units of the school, buildings of three and four stories respectively, have been erected. They house the preclinical departments, the offices and research laboratories of the clinical departments and the library, which contains over seven thousand volumes and receives over two hundred and twenty-five current medical journals. A circulating library service is provided for the practicing physicians of the Pacific Northwest and a large number of books and periodicals are loaned by mail.

The medical school has the class "A" rating of the Council on Medical Education and Hospitals and offers a four year course to students who have had three years of premedical education at an approved college. Approved colleges in Oregon offering premedical courses include the University of Oregon, Oregon State College, Southern Oregon Normal School, Reed College, Pacific University, Willamette University, Linfield College and Mount Angel College. The medical school provides the only undergraduate medical training available in the Pacific Northwest, with the result that students register there from Washington, Montana, Idaho, California, Utah and Alaska, as well as the Hawaiian and Philippine Islands.

Second of the Marquam Hill group is the Multnomah County Hospital. This hospital, which is of the same architectural design as the medical school buildings, is a general charity hospital, accommodating three hundred beds and embodying the most modern conception of a teaching hospital. The director is a university official and the majority of the staff are appointed from nominations made by the medical school. This arrangement provides a most successful affiliation for teaching, research and care of the sick.

Doernbecher Memorial Hospital for Children is the third Marquam Hill institution. This structure also harmonizes in architectural design with the other buildings of the group. The hospital, which has a capacity of eighty beds, is owned and operated by the university. It provides exceptional facilities for the care of sick and disabled children committed to the medical school by the counties of the state under the Children's Hospital Service Law and affords every opportunity for teaching and research in pediatrics and other clinical departments.

The most recent addition to Portland's medical center on Marquam Hill is the new Veterans' Hospital. This institution, comprising thirteen buildings of the most recent design and with the latest equipment, provides facilities for three hundred and ten patients, and includes a tuberculosis and a neuropathic ward. The hospital has not yet been made an official diagnostic center by the Veterans' Bureau but it will in effect serve as such for the entire Pacific Northwest area.

Portland's other facilitiies for the care of the sick are also exceptional for a city of its size. Charity patients are cared for at the Portland Free Dispensary. This institution is operated jointly by the People's Institute, a private philanthropic organization, and the medical school. The professional and nursing staff is appointed by the medical school, so that the dispensary provides a valuable clinical teaching station. Daily clinics are held in tuberculosis, venereal diseases, surgery, obstetrics, pediatrics and the other clinical branches.

The city has thirty hospitals and homes, six of which have been approved for internship by the Council on Medical Education and Hospitals. Eight of the hospitals have been approved by the American College of Surgeons. The number of beds per hospital ranges from eight to 364, and the total capacity is 2,325 beds.

Every institution in Portland's medical center has promised to cooperate to the utmost with the pathologic department of the medical school and the clinical pathologists of the city in providing suitable pathologic material during the coming session. Visiting Fellows of the American Medical Association may thus be assured that the demonstrations on fresh pathology will be fully up to the high standard set at recent meetings of the Association.

PSYCHODERMIC MEDICATION

Nowadays, more than ever before, we are beseiged by the exponents of a vast variety of therapeutic agents which, if honestly assessed, must be characterized as ranging from therapeutic possibilities to therapeutic probabilities. Theoretically, no doubt, they carry at least a hazy scientific background, the inadequacies of which are well sketched in by the detail man. This is an essential prerequisite to any sort of broad professional acceptance. There must be plausability or "therapeutic possibility" in order for a procedure to achieve the dignity of inclusion at the lower limit of the range of this discussion.

We will restrict the upper range to the limit of probability in order to exclude materia therapeutica which has achieved certainty. We will simply admit that, judged on any decent scale of critical values, there is a mass of material lying between the two levels of possible and probable. To avoid didacticism, let the reader fill in these rungs of the therapeutic ladder for himself. No doubt the material included will vary widely with the individual. Yet for the purpose of this discussion, "what have you" will serve as well as a detailed reference to most of the popular hypodermic and intravenous therapeutic flares, or the new concentrated vitamine Q at a thousand a milligram, or the ultra hot water cooled arc. We will concern ourselves with generalities and the idea, rather than with actualities and proprietary trade names.

So, for each of us, regardless of individual selection, there looms the white elephant of remedies of questionable value to the patient. The problem presents a thousand facets, gleaming, blank, multicolored, according as the light strikes. The salesman is euphoric, the laboratory experimenter is flatly pessimistic, clinical observers vary, a friend advises it, another friend advises against it. Personal experience is of necessity limited and inconclusive. A perfect hodge-podge of contradictory evidence! All these conflicting data, however, crystallize into actual importance only as the patient stands before us requiring our help.

Too often in the present day our patients bring their preconceived ideas of therapeusis with them. Publicity methods have advised them of new developments, and a cunning trade has foreseen the advantage of devising therapeutic methods which require the physician as intermediary (contributory to the crime?). Too often, now, we are confronted by a patient who wants treatment without diagnosis. Publicity methods picture diseases in colors which can be applied broadly by nearly everyone, to himself. Pseudomedical journalism slyly advises of the ailment and even more cunningly points out the remedy, and to the physician is thrown, as a sop, a sort of go-between fee.

So we are often called upon to treat an indefinite disease entity by methods of possible, or at most probable inefficiency. If we acquiesce, the chances are that psychic factors will aid us and that the patient will report progress temporarily at least. We are all conversant with the willingness of both the laity and the profession to see favorable results where such are desired. It is astonishing how much can be achieved by the simple psychic mechanism of wishing and expecting. It is, perhaps, in a sense akin to the efficacy of prayer. Be that as it may, if we refuse, we are apt to be considered reactionaries, unwilling and ungenerous in our attitude toward recent advances. And, finally, if we still refuse, a contemporary, less critical if not precisely unethical, will certainly accept the task.

By adding his encouragement to the high hope of the patient, the physician who majors in this type of medication enhances the chance of psychic improvement. Furthermore, it is a notable fact that practitioners of this type exact high fees. This is good psychology, if not immaculate ethics. A person is almost compelled to see favorable results from a procedure for which he has persuaded himself to pay dearly. And so, for the nonce, the medical opportunists do well.

Again delineating the limits of our problem to the range of "possible to probable therapeutic agents," should we not each turn the cold eye of candor on our own methods? Two important questions arise. How far is our use of such procedures affected by the immediate financial considerations involved; and to what extent are we allowing the patient's prejudices (result of publicity methods, etc.) and our desire to retain his good will to influence our decision? If we cannot expose our practices to the revealing light of such candid questions without flinching, then we are due for a revision of our basic ethics. Certainly our efforts should rightfully turn to the business of making our practices lucrative, and to the winning of enthusiastic supporters among our patients, but never by the use of methods whose fundamental value we cannot honestly and whole-heartedly support. Never can it be justifiable to urge the use of measures of doubtful effect by overstating their case, or to stoop to the use of suggestion in indicating resultant progress.

Certainly the occasion may arise which will indicate the use of these "questionables." Granting that the procedure is harmless, and that other better tried methods have failed, there can be no lapse of ethics in explaining to the patient the precise status of the "remedy" and advising its use. Neither is it necessary, in order to satisfy a burning conscience, to refuse compensation. Certainly in such an event more consideration should be given the patient's economic status than in the employment of necessary and tried measures. Yet is it not so, that as we pass from the honest, tried old remedies to the more complex and less proven modern methods and beyond into the field of quackery, there exists a rising scale of fees? This distortion of values we should avoid. In this field more than in any other the patient must be taken into the confidence of the physician. If we are to compete with the suggested diagnosis and treatment of pseudomedical journalism, we must be painstaking and convincing, and never by even so much as mere passive acceptance fail to call a spade a spade.

CHANGING STYLES IN FIGURE

As has always been the custom in styles of dress, so has it come about that styles in the human figure likewise are subject to individual variation. While a generation ago women's skirts trailed the ground, accumulating all available microbes, of recent years no length has been too abbreviated to suit the popular taste. Until recent years the preference was for the plump female with the rounded graceful figure, but nowadays the stylish damsel is satisfied only with the willowy boyish form. The latter delectable conformation is sought by means of dieting, which the ambitious female seeks to attain chiefly by eliminating carbohydrates. For this purpose sugar has become the special anathema. By means of effective publicity the opinion has been disseminated that sugar and sweets are the main factor in establishing adiposity, although the potato farmers have been in a panicky state of agitation, owing to boycotting of this tuber.

A word of warning has not been wanting of late as to the dangers of these starvation diets. Young women have been cautioned as to the chances between impaired health and the highly prized figure. Attention has been called to the fact that overweight is not due to the excessive consumption of sugar alone but to the excess in carbohydrate calories in toto. Sugar, in fact, is a useful and necessary food for all around sustenance and its elimination is indicative of reprehensible shortsightedness. Already the cycle of slimness seems likely to be terminated. The arbiters of fashion indicate that more plumpness is to be desired for the future. Quite a contrast to the prevailing figure of American girls was recently presented by the chorus singers of an English opera company, where rotundity of form with artistic fullness of torso universally prevailed. One could not but wish that the young females of his acquaintance might emulate such examples.

OREGON MEDICAL BLUE BOOK

The Oregon State Medical Society has issued the first volume of its Medical Blue Book which, it is stated, will be published annually. It is a paper covered volume of two hundred and forty-eight pages, containing all sorts of valuable information regarding medicine and the medical profession in the state. The state society is featured with its constitution, by-laws, medical ethics and roster of officials. Similar information is presented on the Oregon Public Health League, American Medical Association and special medical societies. There is a summary of laws and regulations affecting physicians, including information concerning national and local boards of medical examiners. State health laws and regulations are presented in full as well as Federal income tax laws and regulations. The University of Oregon Medical School and the hospitals of the state are described. The directory of physicians of the state includes an abstract of the life of each so far as available. Every practitioner of Oregon will find a wealth of information in this volume concerning himself and his associates.

HOTEL ACCOMMODATIONS FOR THE A. M. A. MEETING AT PORTLAND

The local Committee of Arrangements wishes to call the attention of the Fellows of the Association to the fact that the Portland hotels are not raising their rates during the convention. The regular rates will prevail except that each double room will be charged for at the regular rate whether one or two persons occupy the room. This arrangement is more liberal than is customary at conventions, as the usual custom is to charge double the regular single rate when a double room is used by two persons.

Reservations have already been booked for Fellows in fifteen states. An experienced hotel man has been placed in charge of hotel arrangements, and definite assignments are being made to the various hotels. A printed "Hotel Reservation" form is being used which indicates the name of the hotel and the type of accommodation reserved. One copy of this form is sent to the one requesting a reservation and another copy is sent to the hotel.

The committee asks that those desiring reservations indicate the hotel of their choice, the type of accommodations desired, and, so that duplication may be avoided, the names of the persons who will occupy the rooms. *All requests for reservations should be addressed to Dr. E. A. Sommer, Electric Building, Portland, Oregon.*

The rates quoted in the following list of Portland hotels and apartment hotels are for one or two persons in each room, unless otherwise indicated.

PORTLAND HOTELS

	Without Bath	With Bath
Adler		$5.00
Angela	3.00	5.00
Arthur		5.00
Bellevue	2.00–3.00	
Benson		6.00–10.00
Bridgeport	2.00	3.00
Byron	3.00	5.00
Campbell		5.00
Campbell Court		5.00–6.00
Campbell Hill	3.00	4.00
Caples	4.00	7.00
Carlton		6.00
Carlyle	3.00	4.00
Carroll		3.50
Chamberlain	2.00	3.00
Clifford	2.00	3.00
Clyde		5.00
Commodore		5.00–6.00
Congress		6.00–7.00
Conradine		4.00
Cornelius	3.00	5.00
Eaton		4.00
Gordon		5.00*
Hamilton	2.00	3.00*
Heathman		6.00
Hillcrest	3.00	4.00*
Hoyt	3.00	6.00
Imperial	3.50	4.00–8.00
Lenox	3.00–4.00	5.00
Loraine		4.00
Mallory		5.00–7.00
Montana		3.00
Morris	3.00	5.00
Multnomah	3.50	4.00–8.00
Navarre	$3.00–$6.00	
Nortonia	3.00	5.00
Oregon	4.00	6.00–7.00
Palace		5.00*
Perkins	3.00	5.00
Portland	3.50–4.00	5.50–7.00
Prince of Wales		6.00
Ritz		5.00
Roosevelt		6.00
Rosario		5.00
Roseland	3.00	5.00
Rowland	3.00	4.00*
Seward	3.00	4.00–5.00
St. Andrews		5.00
St. Francis	3.00	5.00
Sovereign		6.00–7.00
Treves	3.00	
Washington	3.00–4.00	5.00–6.00*
Y. M. C. A.	1.50 Single 2.00 Double	

PORTLAND APARTMENT HOTELS

Admiral (2 room)	5.00
Cromwell (2 and 3 room)	5.00–10.00
Doricourt (2 and 3 room)	4.00– 6.00
Empress	5.00
Lafayette	4.00– 5.00
San Carlos	5.00–10.00
Wheelden Annex (3 room connecting bath)	6.00
Wheelden Annex	3.00

*Connecting bath.

INTERNESHIPS AT UNIVERSITY OF OREGON MEDICAL SCHOOL

REPORT OF THE COMMITTEE

FRANK R. MENNE, M.D. CHAIRMAN

Years ago the American College of Surgeons established the movement for the standardization of hospitals with the object of raising the character of hospital service to a plane similar to that resulting from the rating of medical colleges by the Carnegie Foundation and the Council of Medical Education of the American Medical Association. Practically all graduates in medicine serve from one to three years as internes in accepted standard hospitals as a final experience in the completion of their medical course. After the standardization of hospitals many medical colleges began to actively require so-called fifth or interne year.

The number of medical colleges now requiring this additional year is eleven. Such hospitals, in which the required interneship is served, must meet the approval of the individual colleges, because the basis of standardization does not necessarily take in the establishment of good interneships. As a result of these two movements, the number of interneships has increased out of proportion to the number of graduates and there is, therefore, a nation-wide demand for internes.

The University of Oregon Medical School does not now, nor has it in the past required the interneship year as a prerequisite to graduation, but with rare exception all of its graduates serve an interneship upon the completion of the regular course. The medical school policy of not requiring the fifth or interne year is due to its inability to accurately control the conduct of such a prolonged course on hospitals loosely affiliated with it for teaching purposes. It has never been convinced of the advisability of requiring a partial plan of instruction only distantly supervised.

The school has, however, taken a keen interest in the development of acceptable candidates for and the promotion of good interneships. Two years ago the dean appointed a committee for the purpose of considering the whole question of interneships from the standpoint of the medical school. The activities of this committee are concerned with (1) bringing to the attention of the graduates the character and standard of the hospitals seeking internes, (2) the provision to the hospital of the scholastic record and other information sought by the hospital concerning the candidate for such a position, (3) the keeping of records of the acceptances and completion of interneships by the graduates of the Medical School, (4) the promotion of a cooperative plan for the betterment of interneships in the hospitals immediately affiliated with the medical school.

Circulars requesting interneships are received from hospitals in all parts of the United States which are made available to all members of the senior class. Our present records show the University of Oregon Medical School graduates have served or are now serving interneships with credit in hospitals in practically every state in the Union.

There has been formed an interhospital interneship committee, consisting of a representative from all of the hospitals in the City of Portland and the University of Oregon Medical School. This committee has for its sole object a cooperative effort to improve the character of interneships in the hospitals concerned to the advantage of the patient, the hospital, the student and the medical school.

MEDICAL NOTES

American Association for the Study of Goiter will hold its annual meeting at Dayton, Ohio, March 25-27. The purpose of the organization is to establish a forum, where all subjects pertaining to goiter may be presented and fully discussed.

OREGON

Health Demonstration Continued. The work of the Marion County Child Health Demonstration is to be continued throughout 1929, following a decision by the county budget committee and local court to appropriate $6,050 for this purpose. This was the full amount which had been requested from Marion County by the Commonwealth Fund of New York which for several years has been conducting the demonstration. At an early meeting the budget committee had voted to reduce the annual appropriation to $1,890. In reply to this the Commonwealth Fund, through its local director, Dr. Estelle Warner, announced that this amount was insufficient and that in consequence the local unit would have to be abandoned. After an extended hearing of arguments by proponents and opponents of the health demonstration, the appropriation was increased under an agreement that the county shall have control of the manner of expenditure of the funds in question.

Portland Quacks Investigated. The recent arrests in Portland of J. F. Kolar, chiropractor, and of W. E. Dentinger, alleged illegal practitioner, have brought to the attention of the district attorney the fact that there exists an extensive system of quackery, involving cultists and two questionable East-side private hospitals. Deputy District Attorney C. W. Kirk, it is said, has begun the questioning of approximately fifty persons who have expressed willingness to testify to malpractice on the part of Portland quacks. Kolar, who was arrested Dec. 18, was accused by several patients of taking x-ray photographs, and subsequently exhibiting them a "phony" plate in which "falling" of the stomach, ulcers and other pathologic changes were said to exist. In each case he recommended "bloodless surgery" in an East-side institution. Later examinations by reputable physicians failed to disclose in several instances the existence of the diseases diagnosed by Kolar. Dentinger was arrested Jan. 5, on the charge of practicing medicine without a license. He is involved in the death of Max Bernstein who succumbed a day after submitting to a "bloodless" operation performed by him at a so-called hospital, known at various times as the "Order of Harmony," the "Healthorium," etc. Julian S. Ward, alias Swindells, testified before Deputy Prosecutor Kirk that he was associated with Dentinger in the organization of the Homeopathic Institute at 18 East 30th Street. Kolar is also said to have been active in this institution.

Henry Waldo Coe Prize. The University of Oregon Medical School has been made the beneficiary, through the bequest of the late Henry Waldo Coe, in the sum of $1,000.00 in trust to be known as the "Henry Waldo Coe Fund." Under the terms of the bequest the annual income from the investment establishes the "Henry Waldo Coe Prize," which is to be given by the faculty of the medical school each year for the best thesis upon subjects to be selected by the faculty.

Hospital Bequest Announced. An endowment of approximately $75,000 has been made to the Portland Shriners' Hospital for crippled children by the late Mrs. Lillie Norris Cordray, widow of John F. Cordray, pioneer theatre magnate of Portland. Mrs. Cordray, who died Dec. 24, left practically her entire estate to the hospital. The endowment is to be held in trust under the name of the "Cordray Memorial Fund."

Hospital to be Remodeled. The building at 250 East Second Street North, Portland, which was used as a Veterans' hospital before the opening of the new government institution at Marquam hill, is being remodeled preparatory to reopening as a general medical and surgical hospital.

Veteran Physician Honored. The Lane County Medical Society at a meeting in December, voted to recognize the long service of Dr. George O'B. De Bar of Eugene by awarding him a life membership. Dr. De Bar, who holds a medal of honor from the government of Venezuela for services rendered in that country, has been a member of the Lane County society for twenty-seven years. He is the first member to be honored by the award of a life membership.

Women Physicians Elect Officers. At the annual meeting Jan. 14 of the Portland Medical Club, whose membership is composed of women physicians practicing in Oregon, Dr. Mabel Akin was chosen as president. Other officers selected were: Vice-president, Dr. Dora Underwood; secretary, Dr. Helen A. Carey; treasurer, Dr. Kittie P. Gray.

Board of Health Officers. At the annual meeting of the Oregon State Board of Health, which took place at Salem Jan. 9, Dr. Harold C. Bean of Portland was elected president, succeeding Dr. E. B. Pickel of Medford. Dr. W. B. Morse of Salem was elected vice-president. Dr. Frederick D. Stricker of Portland was retained as secretary. The board passed a resolution to cooperate in the national campaign to control the influenza epidemic.

Cancer Doctor Fined. Frank Bubusk, who has been posing as a cancer doctor at Lakeview, was fined $60 in the local justice court Dec. 28 on a charge of practicing medicine without a license.

"Harmony" Doctor Invades Umatilla. "Dr." C. Kingdom, alleged to have practiced recently in Portland as one of a group of so-called "Harmony" doctors, was arrested in Pendleton Jan. 11 on the charge of illegal practice.

Jackson County Medical Society held its annual banquet at the Hotel Medford, Medford, Jan. 16. The wives of the members of the society were guests at the affair, at which Dr. J. C. Hayes acted as toastmaster. Following the dinner there was a program of musical and other entertainment.

Clatsop County Medical Society elected officers for 1929 at a meeting at the Columbia hospital in Astoria Jan. 16. Those elected were president, F. H. Vincil; vice-president, L. M. Spaulding; secretary-treasurer, Glenn Morgan, all of Astoria.

Central Willamette Medical Society at a meeting at Eugene early in January elected Dr. N. E. Irvine of Lebanon president for the ensuing year, and Dr. M. M. Woodworth of Albany was chosen secretary.

Portland City and County Medical Society held a meeting Jan. 16. Dr. Harold C. Bean read a paper on "Influenza." A pathologic exhibit on tuberculosis was demonstrated by Dr. Frank R. Menne of the University of Oregon Medical School.

Dr. George H. Adler has joined the Klamath Clinic at Klamath Falls. He is a graduate of the University of Oregon and until recently was a member of the staff of the Good Samaritan hospital.

Dr. Burton Myers, formerly of Los Angeles, has located for practice at Salem.

Dr. I. U. Temple of Pendleton, left Jan. 13 for Baltimore, Md., where he will engage in postgraduate work in internal medicine.

Dr. John G. Abele, Portland city health officer, underwent an operation at the Good Samaritan Hospital Jan. 10.

Wedding. Dr. John G. Abele, Portland city health officer, and Mrs. Alta J. Coplan of Portland were married in that city Jan. 20.

WASHINGTON

Vaccination Order Resisted. Following an epidemic of smallpox at Bellingham early in January, considerable opposition against the city school board's order excluding unvaccinated children from school was voiced by antagonists of public health. A petition opposing the order was presented to the school board. It was said to have contained over one thousand signatures. Members of the school board stated they were powerless in the matter, since they were acting upon orders from Dr. J. W. Powell, city health officer and representative of the state board of health. The American Medical Liberty League was said to be contemplating making a trial case to test the validity of the state health law with respect to vaccination.

Scientists Convene. The Northwest Scientific Association held its annual meeting in Spokane Dec. 27-28. Dr. George A. Downs of Spokane was chairman of the medical section. Drs. Mitchell Langworthy and S. E. Lambert, of Spokane, spoke respectively on "Scientific Fundamentals in the Mending of the Married" and "Health is Wealth." Among the Spokane physicians who contributed to the medical program were Drs. G. H. Anderson, Charles Doland, Fred Sprowl, and William Pennock.

Hospital Change Opposed. United States Veterans' Hospital No. 59 at Tacoma, known as the Cushman Hospital, was closed Jan. 15, simultaneously with the opening of the new Veterans' Hospital at Portland, Ore. According to reports from Washington, D. C., the Cushman hospital may be converted within six months into a sanatorium for tuberculous Indians. Community clubs in the vicinity of the hospital have voiced opposition to this move.

Former Hospital Chief Honored. At the annual banquet of the staff of the Columbus hospital, which was held in Seattle Jan. 10, a plaque of the late Dr. James H. Lyons, first chief of staff, was presented to the institution. Dr. Milton G. Sturgis made the address of presentation, while Dr. William C. Speidel accepted the memorial on behalf of the hospital. The plaque is of bronze and was executed by Dudley Pratt of Seattle. Tributes to the character of Dr. Lyons and to his zeal in the organization of Columbus Hospital were made by Drs. G. W. Swift, Walter Kelton, E. W. Young, and X. P. De Donato.

Chief of County Hospital Selected. Dr. W. H. Corson of Seattle, chief deputy coroner of King County and former coroner, has been appointed superintendent of the King County Hospital. At a meeting of the medical staff, Dr. Donald Trueblood was elected chief of staff.

Sanatorium Head Resigns. Dr. John F. Steel, medical director of the Mountain View Sanatorium for tuberculosis at Tacoma, tended his resignation Jan. 1. He will engage in private practice in Tacoma.

Seattle Surgical Society held its annual meeting at Seattle Jan. 18-19. Dr. Alfred A. Strauss, professor of surgery at Northwestern University Medical School, was the guest of honor. He conducted two morning clinics at the Providence Hospital. Presentation of surgical cases by members of the society occupied the second afternoon. The meeting culminated in a banquet at the Olympic Hotel, at which Dr. Strauss gave an address on "Subtotal Gastrectomy for the Cure of Duodenal and Gastric Ulcers."

Library Changes Name. Washington Medical Library Association of Seattle, which has functioned under this title for the past twenty-five years, has changed its name to Seattle Medical Library. This action is for the purpose of making the library more distinctive and to avoid confusion with other organizations with similar titles.

Intensive Cancer Study. Dr. George W. Swift of Seattle, governor of the Northwest district of the American College of Surgeons, has been designated to organize units in the Northwest for an intensive study of cancer which the College is planning to undertake.

Veterans' Office Transferred. Dr. Austin J. O'Leary, psychiatrist of the United States Veterans' Bureau Hospital at Tacoma, has been transferred to the Seattle office.

Snohomish County Medical Society at a meeting in Everett Jan. 8, was addressed by Dr. E. Martin Adams, who discussed "Tuberculosis of the Genitourinary Tract." Dr. C. E. Leach of Arlington and Dr. Herman T. Rhoades of Everett were elected members of the board of censors.

Grays Harbor Medical Society, at a meeting at Aberdeen Jan. 16, was addressed by Dr. Philipp Schonwald of Seattle, who spoke on recent investigations in asthma.

Physicians Associated. Dr. C. W. Shannon, who has practiced ophthalmology and otolaryngology in Seattle for the past five years, has become associated with Drs. Wurdemann and Harter of that city. Dr. P. G. Flothow of Seattle has joined Drs. Swift and Dickerson in the practice of spinal cord and brain surgery.

Dr. Frances Houston, who has been engaged in practice in Spokane for several years, has moved to Seattle. She will occupy the offices of Dr. Mabel Seagrave, who left recently for a trip around the world.

Dr. George Price, Spokane neurologist, following a period of several months travel and postgraduate study, has opened offices in Seattle.

Dr. S. G. Brooks of Anacortes has retired as mayor of that city, a position which he has held for the past six years.

Dr. W. D. Kirkpatrick has been elected chief of staff of St. Luke's Hospital, Bellingham.

Dr. G. J. Ten Brook has purchased the estate of the late Dr. J. J. Walter at Elk, and will engage in practice there.

Wedding. Dr. Charles E. Teel and Miss Lillian E. McCush, both of Bellingham, were married at the home of the bride's parents Dec. 14.

IDAHO

License Requirements to be Raised. A bill will be presented before the present legislative session, requiring all applicants for license to practice any branch of healing art in Idaho to have a high school education. After July 1, 1934, they will be required also to possess a two year premedic college degree.

Facilities for Recreation Needed. Dr. J. I. McKelway, medical superintendent of Orofino asylum for the feeble minded, in his biennial report has recommended the provision of recreational centers for the inmates of the institution. The lack of them and the general overcrowding are serious handicaps to the patients, he stated.

Full Time Health Officers Proposed. A bill will be presented before the present legislature, providing for full time health units or districts at the discretion of county commissioners. Funds will be provided by U. S. Public Health Service, Rockefeller Foundation, State of Idaho and the various counties.

Dr. E. L. Berry of Hazelton has taken over the practice of Dr. A. F. McClusky of Buhl, recently deceased.

Dr. J. E. Damron of Pocatello has gone East for a year's postgraduate work at University of Pennsylvania.

Dr. J. H. Sturgess of Coeur D'Alene has been appointed health officer of Kootenai county.

Dr. B. C. Hamilton of Great Falls, Mont., has taken over the practice of Dr. C. E. Landquist at Elk River.

OBITUARIES

Dr. Osman D. Doane, one of the pioneer physicians of The Dalles, Ore., died at The Dalles hospital Jan. 7, following a month's illness, aged 77 years. He was born in Portland, Ore., in 1851 and spent several years of his early life in educational work, being principal of public schools at The Dalles. Later he entered Willamette University Medical Department, Salem. He was a graduate of Bellevue Hospital Medical College, New York, in the class of 1888. Most of his active years of practice were spent at The Dalles. He retired in 1923 on account of advancing age.

Dr. Gilbert P. Robinson, Spokane, Wash., died Dec. 25 at St. Luke's hospital, following a brief illness, aged 29 years. He was born in 1900 in Spokane and received his early education in the city schools there. He graduated from Loyola University School of Medicine in 1926. Following a year spent in hospital internship in Los Angeles, Calif., he returned to his native city, where he entered into practice in association with his father, Dr. L. A. Robinson. A brother, Dr. W. W. Robinson, also survives him.

Dr. Albert Carey, Roosevelt Camp, Gaston, Ore., died suddenly at his home Jan. 14, aged 58 years. He was born in 1871, and graduated from Cleveland-Pulte Medical College in 1898.

Dosage in Heliotherapy. J. Rosslyn Earp, Boulder, Colo. (*Journal A. M. A.*, Jan. 26, 1929), pleads for laboratory control of the dosage of heliotherapy. He publishes a chart showing the intensity of ultraviolet radiation in the sunshine and skyshine, respectively, at Boulder, Colo., recorded at different times during one day. From this it appears that an hour's sun bath at 8 o'clock would give double the dosage of a sun bath at 7 o'clock. Even though the sun bath is taken punctually at the same time every morning, considerable variations in dosage will result from daily variations in the intensity of the ultraviolet energy of sunshine and skyshine.

REPORTS OF SOCIETY MEETINGS

OREGON

POLK-YAMHILL-MARION COUNTIES SOCIETY

Pres., W. W. Allen; Secty., W. W. Baum

Polk-Yamhill-Marion Counties Medical Society held a banquet and meeting Jan. 8, at the Gray Belle hotel in Eugene. About fifty physicians attended the meeting. President W. W. Allen of Mill City acted as toastmaster.

Papers were presented by Drs. W. H. Barebdrick, McMinnville, and F. H. Thompson, W. W. Baum and W. G. Morse, of Salem.

Officers for the ensuing year were selected as follows: President, Dr. D. R. Ross, Salem; vice-president, Dr. R. E. Kleinsorge, Silverton; secretary-treasurer, Dr. W. W. Baum, Salem.

PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., C. J. McCusker; Secty., E. W. St. Pierre

Portland City and County Medical Society held its annual banquet and election of officers in the ballroom of the Multnomah hotel Jan. 2. Dr. Wilson Johnston acted as toastmaster. An address was made by Mayor Baker of Portland, who commended the local physicians in their successful effort to bring the American Medical Association convention to Portland next July. Dr. E. A. Sommer, chairman of the local committee of arrangements for the convention, presented plans for entertainment of the visitors at the national meeting.

Officers of the society for 1929 were elected as follows: President, E. B. McDaniel; vice-president, E. W. St. Pierre; secretary, Mar Bisaillon; treasurer, Kittie P. Gray. Members of the board of councilors: F. R. Menne, J. L. McCool, H. P. Rush, Dr. G. N. Pease, K. H. Martzloff, L. B. Kingery, Dr. Laurence Selling, C. H. Smith, J. H. Fitzgibbon, Dr. Wilson Johnston, H. S. Mount, and R. B. Dillihunt. Delegates to the Oregon State Medical Society included A. C. Van Cleve, R. A. Fenton, R. H. Wellington, F. A. Kieble, S. H. Sheldon, F. N. Dammasch, R. E. Watkins, C. L. Rybke, J. H. Fitzgibbon, C. H. Manlove, T. H. Coffen, R. M. Dodson, F. P. Johnson, and George Ainslie.

WASHINGTON

GRAYS HARBOR COUNTY MEDICAL SOCIETY

Pres., H. C. Randolph; Secty., K. D. Graham

Grays Harbor County Medical Society held its annual meeting at the Hotel Morck in Aberdeen, Dec. 17. Dr. Mar Bisaillon of Portland, Ore., delivered an address on Differential Diagnosis of Tuberculosis.

Officers for 1929 were selected as follows: President, H. L. Hull, Elma; vice-president, E. L. Calhoun, Hoquiam; secretary, K. D. Graham, Aberdeen. Delegates to the state convention, A. J. McIntyre, Hoquiam; alternate, A. E. Anderson, Aberdeen.

KING COUNTY MEDICAL SOCIETY

Pres., D. C. Hall; Secty., C. W. Shannon

The annual general meeting of King County Medical Society was held in the auditorium of the Medical-Dental Building, Seattle, Jan. 7, with President D. C. Hall in the chair. About three hundred members were present. Minutes of the last general meeting were read and approved.

The following members were voted into membership: Drs. E. F. Corneliussen, D. C. Dever, C. H. Harger, H. H. Hewitt, D. O. Kraabel, J. F. LeCocq, Martin Norgore, C. A. O'Connor, N. K. Rickles, P. M. Rogers and Frank Wiebe.

Applications for membership were received from the following: Drs. C. L. Dixon, T. M. Manley, R. Y. Thompson, H. C. Turner, A. S. Wilson.

Dr. C. A. Smith spoke on behalf of the Medical Library, stating its necessity for study and research work to all members of the society. All members of the profession are privileged to use the library for reading purposes but only members are permitted to withdraw books, membership being contingent upon the payment of dues of one dollar per month. All were urged to join and cooperate in support of the library.

Dr. W. W. Bell announced the annual clinics of Seattle Surgical Society to be held at Providence Hospital January 18-19, by Dr. Alfred Strauss of Chicago, to which the profession was invited.

Dr. C. W. Shannon, secretary-treasurer, read a financial report of the society for the past year.

Dr. J. H. Harter read a paper, "Plastic Surgery of the Nose." He reviewed the history of plastic surgery, particularly reciting the development of rhinoplasty. The principles in common use today were used by the pioneers of long ago. The principles on which this class of work is based were recited in detail, and many interesting facts presented bearing on abnormalties of the nose and the means of correcting various deformities. The possibility of doing this work successfully has been largely a result of the work performed on injured soldiers following the World War. Correct nasal plastic surgery demands that the surgeon must be a competent rhinologist with knowledge of nasal anatomy and its diseases. Many interesting and illustrative slides were displayed explanatory of the work which has been done by the essayist. The paper was discussed by Dr. H. D. Dudley.

The following officers were elected for the ensuing year: President, Dr. Brien T. King; president-elect, Dr. D. H. Houston; secretary-treasurer, Dr. H. L. Goss; trustees, Drs. A. H. Peacock and R. J. McCurdy. Delegates to Washington State Medical Association annual meeting were elected as follows: Drs. A. T. Wanamaker, A. H. Peacock, G. W. Swift, W. C. Speidel, J. W. Dawson, E. W. Young, C. E. Watts, R. J. McCurdy, W. H. Anderson, F. T. Maxson and O. S. Proctor.

LEWIS COUNTY MEDICAL SOCIETY

Pres., B. B. Stephenson; Secty., Rush Banks

A regular meeting of Lewis County Medical Society was held at Centralia January 14.

Following a dinner at St. Helens Hotel in Chehalis the election of officers took place. The officers elected for 1929 were as follows: President, William R.

Scott, Centralia; vice-president, H. R. Pettit, Chehalis; secretary-treasurer, Rush Banks, Centralia.

The Seattle guests for the meeting were Dr. R. I. Jeffery, who read a paper on "Arthritis"; Dr. Irwin Weichbrodt with a paper on "Symptomatic Pain" and Dr. I. H. Moore with a paper on "Thoughts on the Colon with Reference to Infections."

PIERCE COUNTY MEDICAL SOCIETY

Pres., W. G. Cameron; Secty., W. B. Penney

The regular meeting of Pierce County Medical Society was held on the second floor of the Washington Building, Tacoma, Jan. 8. Minutes of the previous meeting read and approved.

The treasurer's report for the year 1928 was read and Drs. Kanaga and Steagall were appointed as an auditing committee.

The application of Dr. I. A. Brues for membership was read and referred to the Board of Trustees.

PROGRAM

"Measurement of Intelligence and its Practical Use in the Schools," by Miss Jennie M. Reed, Ph.D., of the Tacoma Public Schools. This was an interesting paper, explaining the work from a psychologic and medical standpoint as seen in the public schools.

"Points of Interest to the Practitioner in the School Health Program," by Dr. E. A. Layton, Director of Health in the Tacoma Public Schools.

There was a general discussion of these papers, and a vote of appreciation was given Miss Reed and Dr. Layton for their papers.

SPOKANE COUNTY MEDICAL SOCIETY

Pres., P. J. Gallagher; Secty., R. M. Schulte

Spokane County Medical Society held its annual meeting at the Spokane City Club, Spokane, Jan. 10. After a banquet the following officers were elected for 1929:

President, Dr. Carroll Smith; Vice-president, Dr. C. B. Ward; Secretary, Dr. R. M. Schulte; Treasurer, Dr. P. A. Remington; Member of the Board of Censors, Dr. C. M. Anderson; Delegates to the State Convention, Drs. G. H. Anderson, E. J. Lawrence, H. E. Rhodehamel, I. S. Collins; Alternates, Drs. C. R. Mowery, F. J. Whitacker, E. M. Welty, R. A. Greene; Members of the Executive Committee, Drs. G. H. Anderson, E. J. Lawrence, R. A. Greene.

Dr. Otis Lamson of Seattle read a paper on "Surgical Aspects of Cardiospasm," describing his operation of digital dilatation of the cardia after gastrostomy and describing also the operations for cardioplasty and esophagogastrostomy.

Dr. George Miller of Seattle read an extremely interesting paper on "Vascular Lesions of the Extremities." He described in detail, giving diagnostic features and treatment of Raynaud's disease, erythromelalgia, thromboarteritisobliterans and arteriosclerosis.

WALLA WALLA VALLEY MEDICAL SOCIETY

Pres., J. T. Rooks; Secty., C. J. Johanneson

The regular meeting of Walla Walla Valley Medical Society was held at Walla Walla at the Marcus Whitman Hotel, the evening of Jan. 10. President J. T. Rooks presiding, following the banquet. The attendance was large, including visitors from Pomeroy, Wash., and Athena, Ore.

Dr. C. A. Nelson of Seattle read a paper on "Surgery of Benign Prostatic Obstruction," illustrated by lantern slides, describing in detail the surgical steps and procedure of removal of the gland by the one-step, suprapubic method. He outlined the differential diagnosis between suppurative prostate and carcinoma. He described preparation of the patient, spinal anesthesia, and details of sacral and transsacral block by lantern slides. The paper was discussed by Drs. F. C. Robinson, J. C. Lyman, J. W. Ingram and W. A. Pratt.

The secretary read telegraphic communications with the Surgeon-General of the United States Public Health Service relative to securing a medical officer to speak before the Society on epidemics at its February meeting.

Due to the sudden illness of Attorney E. J. Cannon of Spokane, he was unable to fill his engagement to address the Society on the legal aspects of the practice of medicine and professional ethics; therefore, his topic was presented by Attorney Everett Smith, member of Walla Walla Bar Association, who described in detail the difference between wilfull malpractice, gross negligence, ethical and civil malpractice. A great number of malpractice suits are due to unkind, rather thoughtless words of the medical profession. The great danger of malpractice comes from the "follow-up" treatments and abandoning the case too soon.

Dr. H. S. Foskett of Pasco demonstrated a new type of vaginal speculum, it being with four blades or retractors, an improvement over the old bivalve speculum.

PUGET SOUND ACADEMY OF OPHTHAMALMOLOGY AND OTO-LARYNGOLOGY

Pres., W. O. Bell; Secty, A. E. Hillis

The Puget Sound Academy of Ophthalmology and Oto-Laryngology held its annual banquet at the University Club, Seattle, Tuesday, January 15. Following the dinner a business session and election of officers was held at the Virginia Mason Hospital.

Reports from the various standing committees were heard. Dr. Dowling, chairman of the Program Committee, was unable to be present but sent in a very complete report which was read by the president, Dr. Bell. In his report Dr. Dowling urged each member to prepare one paper a year and also stressed the desirability of more careful preparation of case reports. An immense amount of valuable clinical material presented before the academy each year is lost through neglect of members to write up the cases.

Dr. C. W. Shannon reported for the Entertainment Committee, Dr. F. Brugman for the Library Committee and Dr. F. E. Chase for the Exhibits Committee. Dr. J. S. Davies for the Nominating Committee presented the following list of nominees for office: Dr. W. O. Bell, Seattle, president; Dr. A. B. Murphy, Everett, first vice-president; Dr. F. N. Berken, Aberdeen, second vice-president; Dr. E. J. Clark, Seattle, secretary-treasurer. These were all unanimously elected.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

Lectures on Medicine and Surgery of the New York Academy of Medicine. With 39 Illustrations. Cloth. 319 pp. $5. Paul B. Hoeber, Inc., New York.

There are as usual some extraordinarily good monographs in this volume. The first lecture is by Harlow Brooks on cardiovascular syphilis, given in a characteristic, vital, positive and optimistic spirit. In fact, it seems to the reviewer that the outlook is altogether too optimistic in regard to the cases of syphilitic myocarditis and aortitis which one commonly sees in the charity clinics with a breakdown occurring some twenty years after the primary lesion. These cases are the most hopeless to the average clinician among cardiac patients. A noted clinician recently said, "if anyone knows how to cure these patients, I have yet to learn." Brooks, however, seems to have had remarkable cures from the use of mercury and iodides, followed after a considerable time by intravenous neosalvarsan treatment. He has not seen any serious reactions following the use of salvarsan, providing the patients have been thoroughly treated with mercury. He finds syphilitic hearts do not respond to digitalis, as we all have, and this is rather a proof of the luetic etiology. But after specific treatment digitalis will prove effective. It may well be that we have been too much influenced by Warthin's opinion that the syphilitic heart is incurable except in the earlier stages of infection.

There is a most valuable lecture on surgical aspects of medical conditions by Jennings. He stresses the danger of the knife in spreading infections, as cellulitis; also the harm done by a barium meal in certain conditions, as suspected intestinal obstruction. The same danger has seemed to the reviewer to obtain in giving barium with pyloric obstruction, especially if operation is possibly to be required. The harmfulness of cystoscopy and ureteral catheterization in acute conditions is emphasized. Jennings thinks many cases of empyema have been caused by needling in unresolved pneumonias and depends chiefly on frequent roentgenograms.

In aspiration of pus in two hundred cases of empyema in the army there were twenty fatal cases of peritonitis, chiefly from puncture into the peritoneal cavity, as the diaphragm may reach the level of the fourth rib on the left side after aspiration. The writer points out the necessity of a thorough medical examination of abdominal cases; the fault of the surgeon is to find the diagnosis of abdominal conditions too easy. The natural solution is that the internist always handle the case in collaboration with the surgeon.

Libman's contribution on general bacterial infections is intensely interesting and suggestive. It is shown that there are many local infections in which there is little tendency to bacteriemia. These include infections about the alveolar borders of the jaws, pyelitis of pregnancy, appendicitis with pylephlebitis and erysipelas. Staphylococcic general blood infections arise from osteomyelitis, furuncle, carbuncle, cellulitis, wound and skin inflammations, prostatitis, bladder and postpartum infections more commonly. The prognosis is generally worse in staphylococcic than in streptococcic bacteriemias. The sources of hemolytic streptococcic blood infection include skin and wound infections, genitourinary, postpartum and middle ear infections, tonsillitis, erysipelas, infections of the nose and accessory sinuses, and scarlet fever. Endocarditis arises frequently. Nonhemolytic streptococcic infection is found in subacute endocarditis. Libman emphasizes that the presence of nonhemolytic streptococci in the blood is not certain evidence of the existence of subacute bacterial endocarditis, as they may occur in various conditions, especially in acute rheumatic fever without endocarditis.

In regard to the Welch gas bacillus, Libman states that the most common sources of blood infection are from the puerperal uterus, wounds, gallbladder and intestinal tract, when ulcerated. In the war it was found that 60 per cent of local infections by this organism were accompanied by bacteriemia, and that 54 per cent of these recovered. Libman notes that general blood infection by the Welch bacillus is not rare after abdominal operations and is usually not recognized but diagnosed as postoperative pneumonia. There is no evidence of gas production but a distinctive odor of the body and cadaveric discoloration may suggest the condition. These and many other equally valuable and practical lectures may be found in this book. This collection of the New York Academy of Medicine Lectures on Medicine and Surgery, starting in 1927, has become one of the notable contributions to medical literature. Winslow.

Acute Infectious Diseases. By Jay Frank Schamberg, A.B., M.D., Professor of Dermatology and Syphology in the Graduate School of Medicine, University of Pennsylvania, etc., and John A. Kolmer, M. Sc., M.D., Dr. P.H., D. Sc., LL.D., Professor of Pathology and Bacteriology in the Graduate School of Medicine of the University of Pennsylvania, etc. Second Edition, thoroughly revised. Illustrated with 161 engravings and 27 full-page plates. 888 pp., $10. Lea & Febiger, Philadelphia, 1928.

This volume covers the following diseases: vaccinia, smallpox, chickenpox, scarlet fever, measles, rubella, the fourth disease, erythema infectiosum, typhus, diphtheria, Vincent's angina, mumps, whooping cough, erysipelas and cerebrospinal meningitis. The first edition of this work by Welch and Schamberg was published in 1905. The diseases considered were those in which the authors had had extensive experience in the Municipal Hospital of Philadelphia. The present edition is dedicated to the memory of Dr. Wm. M. Welch, who was connected with the Philadelphia Hospital for contagious diseases for a half century.

The clinical phases of some of the chapters have been largely retained but the book has been brought up to date and a considerable amount of material has been rewritten. New chapters have been added on the prevention of diphtheria, Vincent's angina, serum anaphylaxis, erysipelas, mumps, whooping cough, cerebrospinal meningitis, the "fourth disease" and erythema infectiosum. The book is well illustrated and needs no recommendation to those who have read the first edition. Any physician treating these diseases will find this work a safe guide. It is one of the "masterpieces" of medical writings.

GRISWOLD.

REGIONAL ANESTHESIA. Its Technic and Clinical Application. By Gaston Labat, M.D. Laureate of the Faculty of Sciences, University of Montpelier, France, etc. Second Edition Revised, with 367 Original Illustrations. 567 pp. $7.50. W. B. Saunders Co., Philadelphia and London, 1928.

Local anesthesia in some form is now assuming a more important position in the hands of every surgeon. Its occasional use a few years ago and by a small percentage of men has developed with a better understanding of its possibilities when used alone or in combination with other forms of anesthesia, so that now in many departments of practice it is used as a routine. The satisfactory works on regional anesthesia have added greatly in this development. This second edition by Labat is an excellent exposition of the theoretical and practical phases of the whole subject. As is well known, the experience of the author has been extensive and he has been a consistent student and teacher of regional anesthesia for many years. The well-known Labat outfit for adminstration has facilitated and simplified its various procedures. In this volume complete revision has been made of the whole text with illustrations and additions prompted by the increased experience of the author.

FORBES.

THE MEDICAL CLINICS OF NORTH AMERICA (Issued serially, one number every other month). Volume 12, Number 4 (Philadelphia Number, January 1929). Octavo of 297 pages with 30 illustrations. Per Clinic Year, July, 1928, to May, 1929. Paper, $12; Cloth, $16 net. Philadelphia and London: W. B. Saunders Company.

This number contains clinical reports on a great variety of interesting medical disorders. There is an unusually large group referring to the circulatory system. Riesman presents a lecture on diseases of the coronary arteries. Among causes stress is laid on heredity, a secondary factor being mental strain. Overeating and tobacco are included, while syphilis and focal infection are cited as further causes. Differential diagnosis is to be made from biliary colic, acute pancreatitis, peptic ulcer and gastric crises of tabes. Useful suggestions are offered as to treatment. Rose discusses cardiovascular disease associated with nontoxic goiter. He states that such a relationship is found oftener than in the general population; hence advisability is presented of energetic treatment in simple goiter. Sailer describes a case of psittacosis, a disease in parrots resembling typhoid. It may be transmitted to humans who present symptoms of the intestinal disturbance with lung involvement of pneumonic character. Such a case is described in a woman who was accustomed to be kissed by her pet parrot. This is a valuable and instructive volume.

A TEXTBOOK OF PATHOLOGY. By William G. MacCallum, M.D., Professor of Pathology and Bacteriology. Johns Hopkins University. Fourth Edition, thoroughly revised. Octavo volume of 1177 pages with 606 original illustrations. Philadelphia and London: W. B. Saunders Company, 1928. Cloth, $10.00 net.

Extraordinary advances in pathology have been made in almost every direction and many of these are woven into the text of this fourth edition. The pathologic processes of the more common diseases are emphasized, while those of second-hand information to the pathologist have been reduced or omitted. The author states that "probably it will seem that much else might have been omitted on this basis, but an earnest effort has been made to gather from the literature what was necessary to give some idea of pathologic conditions with which we were not very familiar." The order of the material has been rearranged, better illustrations have been used and a revision of the index has been accomplished, all of which make the volume much more useful.

MOSSIMAN.

LABORATORY MANUAL OF THE MASSACHUSETTS GENERAL HOSPITAL. By Roy R. Wheeler, M.D., and F. T. Hunter, M.D. Second Edition, Enlarged and Thoroughly Revised. 101 pp. $1.75. Lea & Febiger, Philadelphia, 1928.

This is a very valuable and suggestive monograph for handy reference for the general practitioner. Representing the technical procedures of a large general hospital, it offers suggestions for laboratory work, examination and collection of specimens, with special diagnostic methods which will furnish assistance in the treatment of a great variety of conditions. Under therapeutic technic the details are given of all the common bedside procedures daily employed by the busy physician. This is a worth while little volume.

HANDBOOK OF MICROSCOPICAL TECHNIQUE. For workers in Both Animal and Plant Tissues. Twenty-four Contributors. Edited by C. E. McClung, Ph.D., Professor of Zoology and Director, Zoological Laboratory, University of Pennsylvania. With Forty-three Illustrations. 495 pp. $8.00. Paul B. Hoeber, Inc. New York. 1929.

The book is divided into two portions, the first offering a description of the generally applicable methods of microscopic technique, the second more detailed descriptions of specific methods by a series of authors, each having particular skill and experience in the field of which he writes. In the first part, describing methods of slide making, both nonsection and section, little new is added to the very old standard procedures. The description is perhaps a bit sketchy, so that it is doubtful is someone entirely ignorant of the technique could follow it to a successful outcome.

The second part begins with a very complete chapter on microdissection and microinjection. This is commendable, although the practical application of this matter is limited, and as yet out of reach of the individual worker. Possibly too, much space is given to this, and too little to vital and supravital

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staining, chapters on which follow in order. Chapter 3, "Bacteriological Methods," offers the standardized and accepted methods of staining, without presenting a confusing number of methods of varying dependability. The long and detailed chapter on botanical procedure is almost entirely devoid of value from a medical standpoint, although it is apparently well presented.

Subsequent chapters deal with the best methods of handling and staining to bring forth the details of anatomy and microchemistry of specific tissue types. It is in a way a practical hand book to go along with the volumes of "Special Cytology" and as such is of great interest, since in this one often wonders by what methods the statements rather dogmatically made were proven. Generally, these chapters are well presented and contain much useful information, although does seem a little out of line to present methods of hemoglobin determination, which are not microscopical, in a book which passes in entirely the important matter of tissue cultures.

The appendix of formulae is complete and presented in an orderly way. The description of the nature of the various staining agents and variations in their names is a real contribution, since the worker in this field is often confused by the numerous synonyms of various dye stuffs.

Summarizing this book from the medical microscopist's viewpoint, it appears that the elimination of about one-third of it would increase its interest without decreasing its value, but that the other two-thirds contain sufficient well presented descriptions of valuable technical methods to make it worthwhile as a whole.

Cefalu.

An Introduction to Experimental Pharmacology. By Torald Sollmann, M.D., Professor of Pharmacology and Materia Medica at Western Reserve University, Cleveland, and Paul J. Hanzlik, M.D., Professor of Pharmacology at Stanford University, San Francisco. 321 pp. Illustrated. $4.25. W. B. Saunders Co., Philadelphia and London, 1928.

This volume is valuable for students of pharmacology and physicians who are interested in experimental work in physiology and pharmacology. This volume is an adaptation of Sollman's "Laboratory Guide in Pharmacology" with definite instructions in animal experimentation. Part I, dealing with chemical pharmacology, presents chapters relative to tests for poisonous drugs, discussions of their excretions by man, with much specific information on many pharmacologic problems. Part II, concerning experimental pharmacodynamics, contains detailed instruction in a great variety of animal experiments. These demonstrate the action of drugs on the various tissues and organs which are being studied and are all of a technical character. One interested in this line of study will find this work a guide which will be indispensable for such studies.

Compend of Diseases of the Skin. By Jay Frank Schamberg, A.B., M.D., Professor of Dermatology and Syphilology Graduate School of Medicine University of Pennsylvania, etc. Eighth Edition, Revised and Enlarged, with 126 Illustrations. 324 pp. $2.00. P. Blackiston's Son & Company. Philadelphia, 1928.

This well known compend is a handy reference book for skin diseases, especially useful for the general practitioner. It does not pretend to present a complete description of these diseases but furnishes the essential points for diagnosis, differential diagnosis and treatment. The illustrations serve to enhance the value of the text.

The Surgical Clinics of North America. (Issued serially, one number every other month). Volume 8, No. 6. (Pacific Coast Surgical Association Number, December 1928) 277 pages with 118 illustrations, including Complete Index to volume 8. Per Clinic Year (February 1928 to December 1928), Paper $12.00; Cloth, $16.00. Philadelphia and London. W. B. Saunders Co.

As two hundred years have elapsed since the days of John Hunter and his influence still prevails in the field of surgery, this volume has been dedicated to the bicentennary of his birth. An interesting study of the life of Hunter, founder of scientific surgery, is contributed by Gilcreest. This Pacific Coast number is of special interest to the profession served by this journal on account of contributors from this territory. There are clinical reports by Else, Holden and E. W. Rockey, Portland; Lamson, Mason, Turner and Swift, Seattle; J. B. and W. B. McNerthney, Tacoma; A. Matthews, Spokane and S. L. Caldbick, Everett. Their papers cover a variety of surgical topics. The remaining contributions are presented by surgeons from many California cities. As is usual with all these Surgical Clinics, this is a volume of interest and profit.

The Medical Record Visiting List for 1929. Contents: Calendar, July 1928-June 1930. Estimation of Probable Duration of Pregnancy, Approximate Equivalents of Temperature, Weight, Capacity, Measure, etc. Maximum Adult Doses by the Mouth, in Apothecaries' and Decimal Measures. Drops in a Fluid Drachm. Solutions for Subcutaneous Injection. Solutions in Water for Atomization and Inhalation. Miscellaneous Facts. Emergencies. Artificial Respiration. Signs of Death. Hints on the Writing of Wills. Table of Signs. Visiting List and Special Memoranda. Consultation Practice. Obstetric Engagements. Record of Obstetrical Practice. Record of Vaccination. Register of Deaths. Nurses' Addresses. Addresses of Patients and Others. Cash Account. Prices for 30 patients per week, $1.75; for 60 patients, $2.00; for 90 patients, $2.50. Name stamped in gold, 25 cents extra; name and address, 50 cents extra. William Wood & Co., New York.

Renal Back Pressure. Henry A. R. Kreutzmann, San Francisco (*Journal A. M. A.*, Jan. 19, 1929), concludes that the cause of upper urinary tract dilatation in obstructive lesions of the bladder neck and urethra in adults is a stenosis of the intramural portion of the ureter. This constriction is due to hypertrophy of the bladder muscle. When reflex is present, the increased intravesical pressure tends to keep the upper urinary tract dilated to its maximum. After removal of the urethral obstruction, the bladder wall loses its hypertrophy, and stenosis disappears, drainage is improved, and the ureters and kidney pelves return to normal.

NORTHWEST MEDICINE

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ORIGINAL CONTRIBUTIONS

CONTUSIONS AND SPRAINS*

Isidore Cohn, M.D., F.A.C.S.
NEW ORLEANS, LA.
Professor Clinical Surgery, Tulane University
Associate Senior Surgeon, Touro Infirmary

When the diagnosis sprain or contusion is applied to an injury which results from trauma, it is presumptive; by that I mean that much is taken for granted. The surgeon assumes that only soft tissue damage has occurred. Often this assumption is made without due investigation by those scientific measures which are at our command. Such carelessness cannot be justified. This is well illustrated in a damage suit quoted by Scudder in the last edition of his work on fractures, Nickerson vs. Gerrish. The court awarded $5,000 damage in favor of the plaintiff. The basis of the decision was that "the mistake was the result of a failure of the defendant to use painstaking care and diligence and to exercise the best of his admitted learning, skill and judgment in his examination and treatment of the plaintiff's injuries."

It is interesting to note the frequency with which the terms are applied to what seem originally to be simple injuries, some of which in the course of time become serious and demand active intervention. Modern text-books barely mention the terms. Medical journals for the past few years contain few references to them; in fact, one would think that surgeons did not see so-called sprains from the infrequency of reference to them in the literature.

How is it, then, that so many surgeons and general practitioners are willing to assume that an undefinable and hypothetical condition really exists so frequently. They seem to overlook the fact that these cases, when unrelieved, find their way to someone who is willing to make a careful investigation in order to determine just what has happened.

The modern attitude toward sprains may be said to have had its birth in Philadelphia. The pioneer work of Ross and Stewart has been of inestimable value. Their announcement in 1912, "the word sprain standing alone we eliminate," fell like a bomb on the camp of the indifferent who had complacently treated so many for this hypothetical injury.

Unfortunately it seems that surgeons as a group seem to feel like Sir W. Bennett, when he apologized for discussing the subject in the following words: "Unless I had been asked to do so I should not have presumed to contribute to the *British Medical Journal* an article upon such a trivial subject as sprains." One need not apologize for speaking about a term which might almost be eliminated, had not custom dignified its use.

The term sprain conveys the impression that the ligaments have been lacerated. Ross and Stewart have provided experimental proof that the ligaments have greater tensile strength than the bony prominences to which they are attached. When a joint is forced to describe a greater arc than its normal range of motion we may expect a fracture rather than soft tissue damage alone. This fact has been appreciated in regard to fractures of the greater tuberosity of the humerus for a long while, to such an extent that some authorities denied the existence of this injury independent of a dislocation of the shoulder. A diagnosis of sprain is not justifiable, unless one can convince himself by every possible means that a fracture does not exist.

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*Read before the Seventh Annual Meeting of Pacific Northwest Medical Association, Tacoma, Wash., July 5-7, 1928.

The conception of a ligamentous tear is purely hypothetical. No one dies of sprains and operations are not done for their relief; therefore, the pathology is not known. On the other hand, it is known and I expect to give additional proof that, where careful examinations are made, you can determine the existence of a fracture in most instances. It will further be our purpose to show cases where the diagnosis of sprain was made and later, because of the persistence of pain and the existence of deformity or disability, the patient applied for treatment and fractures were found.

It is equally true that the diagnosis of fracture will often be made by those who do not appreciate the normal appearance of the developing epiphysis. A knowledge of this subject is essential to the management of injuries about the joints in children.

There is no part of the body exempt from injury, so we find use of the term contusion applied to injuries in those parts of the body where joints are not easily sprained. The head, back and long bones come in for this diagnosis too often, much to the discredit of the profession.

To illustrate this point I shall introduce the following case:

Case 1. Miss W. C., age 21 years. Diagnosis, linear fracture of the skull in left temporal region.

Summary of history and examination: Automobile accident eight weeks before she came under our observation. Her injury had been diagnosed as contusion of the head, although unconsciousness for one and one-half hours followed the accident. She returned to her teaching position ten days later.

Symptoms. Persistent headache and numbness on left side of her face. She was not conscious of disturbances in vision.

On examination we found pain over the left zygoma. Examination of eye grounds showed an edema of the papillae in both eyes. X-ray examination showed a linear fracture of the skull in the left temporal region. Spinal tapping revealed a manometric reading of 26.

Because of the persistence of her headache and the edema of the papillae following repeated tappings it was necessary to do a decompression operation. The patient was entirely relieved of headaches and the edema of the papillae subsided. It is now two years since operation and the patient has been teaching almost continuously for the last one and one-half years.

Case 2. Master W. W. Diagnosis, fracture of the skull.

Summary of history and examination: Jumped across ditch and struck head. He was taken to an emergency clinic, where he was treated for a small brush burn on the forehead. Within one and one-half hours of the accident the child was unconscious.

Immediate spinal tapping, x-ray examination, and examination of the fundus was done. The eye grounds were negative. X-ray pictures revealed a fracture of the skull, and the spinal manometric reading was 22. A clear spinal fluid was obtained.

The child became conscious within five minutes after the intracranial pressure had been reduced by spinal tapping. Repeated tappings were done, magnesium sulphate was administered by mouth and by rectum. Rest in bed and ice bags were used.

Under this regime the child steadily improved. He left the hospital within two weeks of the accident with no evidence of trouble.

Can you imagine the anxiety of the mother who, having been told that her child's injury was of minor significance, when she saw the unconscious form before her two hours later. More such cases could be presented, but I think this is enough to impress upon one that it is our duty to avoid the careless use of the term contusion in head injuries.

All patients suffering from head injuries should be carefully observed for pupillary changes, blood pressure elevation and signs of increased intracranial pressure. We might add that changes in the fundus are not to be expected early and certainly should not be relied upon as evidence that increased tension does not exist. X-ray pictures will often give valuable data, but it should also be kept in mind that a fracture of the skull, which has produced an increased intracranial pressure, may escape observation on the part of the roentgenologist.

Spinal manometric reading should always be made, if there is the slightest doubt. It should be remembered that the reading under an anesthetic is not as reliable as one taken when the patient is awake.

The diagnosis of contusion in some of these cases may produce serious end-results, as in the case of Miss W. C. who was progressively going blind and suffering untold agony from headaches. These are avoidable, but only by the greatest exercise of care in the early handling and by the elimination of the word contusion until one has eliminated everything else.

Injuries to the face are often diagnosed as contusions, when a fracture of the nose or a fracture of the zygoma exists. Sometimes the diagnosis of contusion of the face is made by the patient and sometimes by the doctor. When a patient makes such a diagnosis, it is a reflection on the local medical profession because he must have gotten his impression from some of the profession.

The following cases are introduced to illustrate the point.

Case 3. Master G. Diagnosis, fracture of the nasal bone without deformity.

Summary of history: The child was accidently kicked on the nose by another boy when he stooped to tie lacing of shoe. Mother brought child to office not because she thought any serious accident had occurred, but as a prophylactic measure.

Examination. The nose is swollen, particularly on the right side. No bleeding from the nose. Both sides can be palpated without causing pain. No edema of either lip. No pain on palpation over either antrum. No respiratory difficulty.

Radiogram taken as a precautionary measure. This revealed a comminuted fracture of the nasal bone without deformity.

Case 4. Mr. W. Diagnosis, fracture of zygoma.

Summary of history. Patient was struck on side of the face with a baseball. He believed that he had just received a contusion of the cheek, but consented to examination.

On examination we found a depression over the midportion of the left zygoma. There was tenderness over this area. Diagnosis of fracture of the zygoma was made. X-ray pictures requested, and this confirmed the diagnosis.

Operation proved the presence of a depressed fracture. He obtained complete relief from pain, and the deformity was overcome entirely.

Case 5: Mr. D. F. Diagnosis, fracture of zygoma.

Summary of history. Patient obtained injury by jumping over a barricade which fell with him. He came in five days after for examination because he thought the condition was a simple contusion. Complete relief by operative reduction.

Comment. If untreated these patients have a definite deformity and persistent pain. Early proper management will avoid trouble.

Injuries of the back are often spoken of as contusions. Two cases are cited here as illustrations of this point.

Case 6. Mr. A. Diagnosis, old fracture of the second and third lumbar vertebrae.

Summary of history. During April, 1926, patient was struck by an automobile. He received no medical attention for three weeks because he was able to be about in spite of pain on the right side.

Examination. X-ray studies revealed an old fracture of the second and third lumbar vertebrae. Application of a plaster jacket completely relieved the pain and enabled him, after a period of several months, to return to his ordinary activities.

Case 7. Mr. Q. R. Diagnosis, fracture of the sacrum.

Summary of history. Automobile accident several months before coming under our observation. He had been treated for contusions of the back. Obtaining no relief he sought further investigations.

X-ray examinations showed a fracture of the sacrum. Pain was relieved by treatment.

Neither of these cases had had x-ray pictures taken originally. One patient was given everything from aspirin to antiluetic treatment without relief of symptoms. A radiogram taken for one surgeon was reported as showing no evidence of bone injury. When he came under our observations careful examination was made and pictures revealed a fracture. His symptoms were relieved by a plaster jacket. The second patient was relieved by proper local immobilization.

There are several instructive points to be had by a study of such cases.

1. The diagnosis of contusion is not justified unless everything else is eliminated.

2. Proper investigation will reveal a greater frequency of fracture of the transverse processes, incomplete fracture of the vertebral bodies and sacral injuries.

3. Early and careful examination with detailed records of our findings will eliminate many damage suits.

4. Patients will suffer less permanent disability, if their conditions are properly treated in their early stages.

So-called contusions of the leg often prove to be incomplete fractures. The following cases illustrate the point.

Case 8. Mr. E. J. L. Diagnosis, incomplete fracture of tibia (fig. 1).

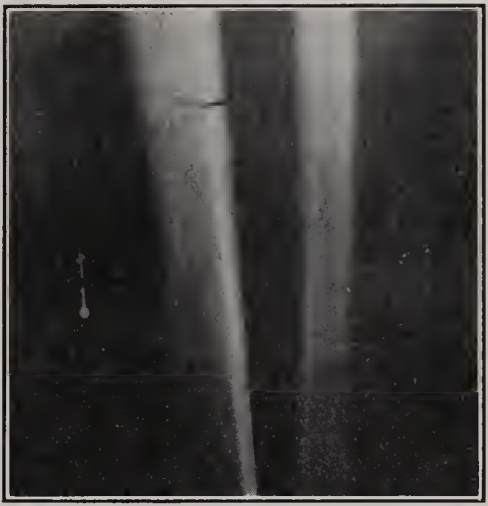

Fig. 1 (case 8). Incomplete fracture of tibia.

Summary of history. While doing gymnastic work, struck leg against piece of wood. He was seen by doctors immediately who ordered turkish baths, application of hot compresses and massage. This did not satisfy the patient who phoned me to meet him at Touro. He told me that he had a broken leg.

Examination revealed brush burns on leg and painful area about the middle third of the leg. No limitation of motion of the knee or ankle.

X-ray pictures revealed an incomplete fracture of the middle third of the tibia. Immobilization and aftercare as for fractures resulted in a perfect recovery.

Case 9. Mr. A. H. Diagnosis, incomplete fracture of the fibula.

Summary of history. Patient jumped off a moving train and struck leg. Examination revealed pain over the lower third of the leg, outside. X-ray pictures revealed an incomplete fracture of the fibula. End results: no disability.

Comments. Such cases are not peculiar nor unusual. They represent a group in which an injury has not been sufficient to immediately incapacitate the individual, but local pain should direct attention that some bone damage must have occurred. During the fall and winter season it is important to look out for those injuries, lest some overzealous football coach insist that a player has a "streak of yellow," if he complains bitterly of pain when the coach thinks nothing but a contusion is present.

So-called sprains which are in most instances sprain fractures are found in the vicinity of the joints.

Shoulder injuries, when associated with pain, limitation of motion but no evident deformity, may on investigation prove to be a fracture of the greater tuberosity of the humerus, or of the body of the scapula or glenoid fossa. These injuries are by no means infrequent.

When a patient is examined, the surgeon should always try to interpret the limitation of motion in terms of the muscle origin, insertion and action. Loss of external rotation and abduction with pain over the greater tuberosity should suggest a fracture of the greater tuberosity. Loss of abduction, internal rotation of the arm and pain over the body of the scapula suggests a fracture of the scapula. These cases will recover without disability if treated early. If allowed to go untreated there will be a permanent limitation of motion of the shoulder.

The following cases will illustrate the point.

Case 10. Miss L. G. Diagnosis, fracture of the greater tuberosity of humerus.

Summary of history. Patient fell and was brought to emergency clinic, where a diagnosis of sprain of shoulder was made. Since that time she has been suffering and unable to move arm.

On examination we found the right shoulder lower than the left. The arm seemed to be rotated inward. There was obliteration of pectorodeltoid groove. No apparent alteration in the contour of the clavicle. Contour of shoulder not altered. There was no pain over the clavicle at any level. There was some pain over coracoid process. No pain over the body of the scapula. The head of the humerus was a glenoid fossa and there was pain over its head. Rotation, particularly outward, was painful. When she rotated arm outward, marked ecchymosis could be seen above the head of the elbow. Abduction painful, limited.

Radiogram was requested of the right shoulder for possible fracture of tuberosity or body of scapula close to glenoid fossa.

Case 11. Mr. D. W. Diagnosis, fracture of greater tuberosity of the humerus.

Summary of history. On March 16, 1913, while trying to step from a moving car he fell to the pavement. He was seen by a doctor who kindly referred him to me on March 24. During the week following the accident the patient noticed that he was unable to use his arm or abduct it.

Examination revealed marked ecchymosis of the arm. There was loss of contour of the shoulder joint. He held his arm close to the body, the arm rotated inward. He complained of severe pain over the greater tuberosity of the humerus. Limitation of motion of the shoulder, especially external rotation. In fact, he was unable to rotate the arm voluntarily to any degree, and passive external rotation and abduction was painful. A diagnosis of fracture of the greater tuberosity was made and the radiogram confirmed the diagnosis.

Case 12. Mrs. C. H. Diagnosis, fracture of the body of the scapula.

Summary of history. Patient fell in basement. Thought that she had sprained shoulder. Pain when she moved it.

Examination revealed no change in the contour, arm abducted. Abduction and internal rotation increased pain. Rotation of the shoulder proved that the head moved with the shaft. Palpation of the body of the scapula below the spine caused pain.

Radiogram confirmed diagnosis of fracture of the body of the scapula.

Elbow injuries come in for a fair share of attention because of undiagnosed epiphyseal fractures in children and fractures of the head of the radius in adults.

To illustrate the point the following case is introduced.

Case 13. Baby M. B. Summary of history. Fell on the left arm about four weeks ago. Taken to institution where x-ray pictures were taken and mother told that there was no evidence of a fracture, but that the child had a sprain. Radiogram did not show break or dislocation.

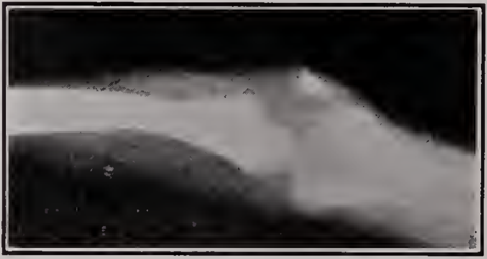
Fig. 2 (case 13). Old fracture of lower epiphysis of humerus.

One week ago mother noticed that the child was unable to use elbow and so far as she could make out there was evidence of deformity. For that reason she consulted a doctor who advised that she have child examined further.

The child came under our observation September 14, 1927. We found loss of carrying angle, marked prominence on the outer side of the elbow, external condyle on lower level than internal condyle. Limitation of flexion of the elbow and extension beyond 110° impossible.

Radiogram requested. A true state of affairs could easily be seen. There had been a fracture with complete dislocation of the epiphysis of the lower end of the humerus (fig. 2).

It was necessary to operate in this case in order to reduce the deformity. The operation was as follows. Usual external lateral incision was made, exposing the radial nerve; retraction of the nerve forward and the triceps backward. Division of the fibers of the brachial radialis, thus exposing the capsule. Incision of the capsule with consequent exposure of external condyle or lower epiphysis.

The shaft of the humerus was anterior to the lower epiphysis, complete backward displacement existing. A skid was introduced between the shaft of the epiphysis. The callus of the end of the shaft was removed. That on the end of the epiphysis was removed. Some shaving down of the epiphysis was necessary in order to permit us to return it to its normal position.

We then found it necessary to use some form of fixation so that the epiphysis would remain in contact with the diaphysis. The simplest we could think of was to make a drill hole through the epiphysis and one in the diaphysis. One kangaroo tendon introduced. The fibers of the brachial radialis and the capsule were sutured over the shaft. Skin closed, and elbow placed in position of hyperflexion.

At the present time, October, 1927, there is no deformity. Supination and pronation not limited. Can flex the elbow with ease well beyond right angle and extend it to about 140°.

Comment. The error in this case was due to the inability of the original examining physician to interpret radiogram of an elbow of a child. If he had known that the capitellum was not in its proper place, he would have immediately anesthetized the child and the operation which I had to do one month later would have been avoided. Many such cases could be introduced but I think this one is sufficient.

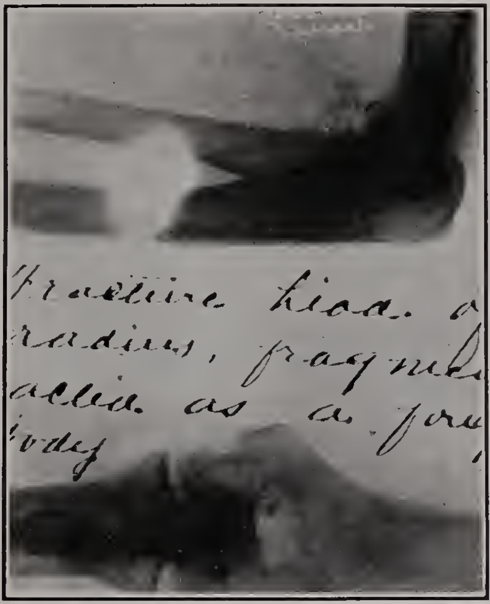

Fig. 3 (case 16). Fracture of head of radius.

Another type of fracture in children is infrequent, but at the same time proper diagnosis will avoid trouble.

Case 14. Baby M. F. Had an injury of the elbow, there was localized pain over the outer portion of the ulna. X-ray pictures revealed a complete fracture through the olecranon into the sigmoid cavity. This might easily be mistaken for a normal epiphysis and the true nature of the condition overlooked, if one does not realize that the olecranon does not begin to ossify until about the ninth or tenth year.

Fractures of the head of the radius in adults occur with sufficient frequency to warrant our particular attention to them, especially when we realize that many of these are overlooked and passed as sprains. If there is no displacement we will only have a limitation of pronation and supination in some of these cases, and possibly a limitation of extension.

Case 15. Miss M. C., age 13. Diagnosis, fracture of the head of left radius.

Summary of history. Patient fell and struck elbow against edge of curbing. Pain, inability to use arm.

Examination revealed a swelling of the elbow most marked over the anterolateral aspect. Elbow held in a position of flexion. Any movement caused pain. Palpation was particularly painful over the head of the radius. Rotation of the head of the radius with the shaft revealed crepitus.

Case 16. Mrs. J. Diagnosis, fracture of head of radius.

Summary or history. September 17, 1920. About six weeks ago patient had a fall. Examining physician told her that she had loose joints and nothing need be done for this condition.

Examination revealed limitation of flexion and extension. Pain over the head of the radius and crepitus, when the examining thumb was placed over the head of the radius and forearm pronated and supinated.

X-ray pictures revealed a number of small fragments of the head of the radius lying anterior to the normal position of the head (fig. 3).

Operative removal of the loose fragments. The capsule was not entirely closed and the patient instructed to exercise the elbow. The Willm's principle

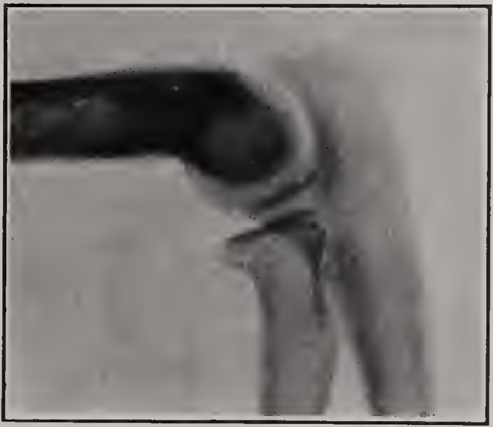

Fig. 4 (case 17). Fracture of head of radius.

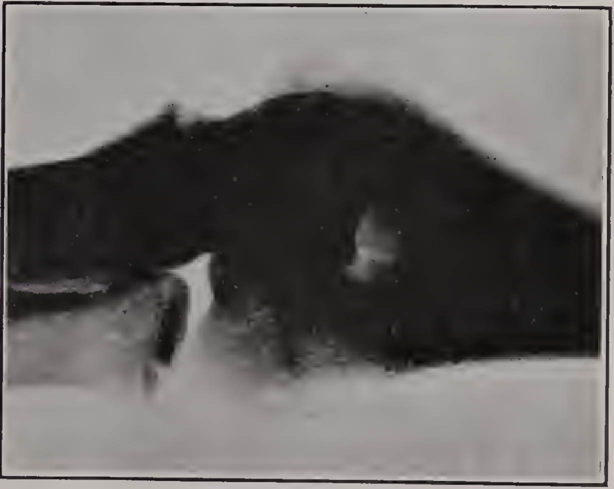

Fig. 5 (case 17). Fracture of head of radius.

of treatment was followed. The result is a perfectly functioning elbow.

Case 17. Miss D. Diagnosis, fracture of head of radius and coronoid process of ulna.

Summary of history. Patient fell and struck elbow. Pain over the head of the radius. Limitation of extension.

Radiogram revealed the fracture mentioned. End-result, perfect functioning joint (figs. 4 and 5).

Comments. Sprains fractures of the head of the radius are of importance because the loose fragment may act as a foreign body to limit motion. A more satisfactory prognosis can be given if the diagnosis is made early. Later, when pronation and supination are limited and the patient seeks relief, he cannot be assured of a perfect result. Early diagnosis will shorten the period of disability, diminish the pain, and avoid unnecessary operation.

Sprain fractures of the wrist include fractures of the carpal bones. Of the many conditions which might be confused with a fracture of the base of the radius, if the accident is recent, we might mention sprains and fractures, or dislocations of a carpal bone. A careful review of cases coming under our observation has convinced us that sprains are uncommon, and if the cases are studied carefully, both clinically and by x-ray pictures in several planes, a small fracture will almost always be revealed.

Fractures and dislocations of the carpal bones, especially the scaphoid and semilunar, are not uncommon. It should be remembered that a fracture of either of the above carpal bones will produce the same limitation of motion as a fracture of the base of the radius, when that is associated with a displacement of the lower fragment. This is due to the fact that the radius, scaphoid and semilunar are the three bones which form the articulation of the wrist. A change in the axis of one of the articular surfaces will limit motion.

Limitation of motion, particularly, dorsiflexion, associated with pain, suggests a carpal injury, if the styloids occupy their normal relationship. To illustrate these points the following cases may be introduced.

Case 18. Mr. T. G. Diagnosis, dislocated semilunar carpal bone.

Summary of history. Had an injury to the wrist as a result of back-fire when cranking a Ford. The doctor consulted immediately told him that he had a bruise.

Two years later patient consulted a surgeon who suspected some injury about the wrist. X-ray pictures taken at that time were reported negative and the surgeon, noting the trophic disturbance, believed that an injury of the median nerve must have occurred. Patient was operated and no relief obtained.

One year later the patient came under my observation. Examination at that time revealed the fact that the injured wrist was one inch larger than the uninjured. There was a circumscribed mass, soft in its most superficial part, but hard when the soft tissues were pressed aside. There was limitation of dorsal and palmar flexion. The two styloids occupied their normal relationship to one another. There was no evidence of nerve injury. X-ray pictures revealed a definite dislocated semilunar carpal bone which was removed.

Summary of operation. Excision of dislocated semilunar carpal bone. Incision about three inches long made on the radial side of the forearm and located between the flexor carpi radialis and the radial nerve and artery. After exposing the vessels, the flexor carpi radialis and the palmaris longis, we retracted the vessel, nerves and the flexor carpi radialis to the radial side. The palmaris longis was retracted to the ulnar side. The deeper group of muscles was then exposed and retracted. An incision was made in the anterior carporadial ligament, thus exposing the dislocated bone. A skid was introduced under the bone and the interosseous ligaments were then cut, after which we were able to remove the bone without difficulty. No important vessels were injured. No nerves were exposed, and no muscle bellies were cut across.

The wound was closed without drainage, but room was left for potential drainage between the sutures. A splint was not applied. Willm's plan was pursued.

End-result, a perfect functioning wrist, good muscle power.

Comments. For three years this patient was partially disabled. His earning capacity was naturally diminished, and he was in constant pain. His disability may be attributed either to carelessness or ignorance on the part of the first doctor consulted. The disability was prolonged because of improper interpretation of the x-ray picture, which error of interpretation caused an excellent surgeon, in his effort to find the cause of the trouble, to interpret the symptoms in terms of a neuroma of the median nerve.

The point which lead finally to the diagnosis was the normal relationship of the two styloids. It was then apparent that there must be a disturbance of the relationship of the first row of carpals to the base of the radius. We had reason to believe that one of these had been fractured and dislocated. Operative removal was followed by relief from pain and recovery of function of the wrist.

Case 19. J. P. T. Diagnosis, dislocation of semilunar carpal bone. (This case was reported in detail in the *Annals of Surgery*, 1921).

Summary. A negro laborer, aged 44 years. Backfire while cranking Ford. He was treated for a fracture of the base of the radius. The treatment consisted in manipulation followed by the application of splints. These were allowed to remain for several weeks.

After twelve weeks the patient applied to the Surgical Clinic at Touro Infirmary for treatment. The wrist was enlarged and there was a hard prominent mass on the flexor aspect of the wrist. Flexion was limited to about ten degrees. Dorsal flexion less limited than palmar. There was loss of grip and glossiness. X-ray picture revealed dislocation of semilunar.

Operation consisted in removing the dislocated bone. End result: return of function, diminished pain, and a gradual return to normal appearance of the fingers.

Comments. The economic value of careful examination is well shown in the case of J. P. T. It was diagnosed as a "fracture of the base of the radius." This man was almost forced to change his occupation because of incorrect diagnosis.

Case 20. Mr. A. L. Diagnosis, fracture of carpal scaphoid.

Summary of history and examination. Wrestling injury. Circumscribed swelling over dorsum of left wrist, no deviation of hand. Limitation of palmar and dorsal flexion, particularly palmar. Pain below base of radius. No alteration of bony landmarks.

Treatment, application of plaster splints. End-results, no deformity, no limitation of motion.

Case 21. Mr. H. F. Diagnosis, fracture of carpal scaphoid.

Summary of history and examination. Football injury. Swelling on dorsum of hand on radial side. No alteration in bony landmarks. No pain over radius nor ulna. Pain below base of radius. Limitation of dorsal and palmar flexion.

Clinical diagnosis, fracture of one of the first row of carpal bones. Radiogram reported fracture of carpal scaphoid.

Treatment, application of light palmar splint.

End-result, no swelling, no deformity, no limitation of motion.

In treating injuries about the wrist one should remember the universal need for a good functioning wrist. Imagine a surgeon or a violinist with a stiff wrist. If you please, you may run the gamut of useful occupations and you will see our responsibility in these cases.

Sprains of the knee may prove to be fractures of either condyle of the femur, fracture of the head of the tibia, sprain fracture of the patella and fracture with dislocation of the semilunar cartilages. This may be illustrated by the following cases.

Case 22. Mr. Z. Diagnosis, fracture of the internal condyle of the femur.

Summary of history. Patient was struck on knee while unloading a truck. Treated by a physician for a sprain and later a dislocated nerve. He applied to the clinic for treatment, at which time it was found that he had some flexion of the knee over the internal condyle and some hydrarthrosis of the knee.

An anteroposterior as well as a lateral view of the knee was requested, but for some reason the anteroposterior was not taken and a report of "negative to bone changes" was made. A subsequent lateral view was made which revealed a fracture of the internal condyle of the femur. The loose fragment was removed, the wound healed without trouble and the patient recovered the ability to flex and extend the knee. The last time he was seen the weight bearing power was perfect and the motions of the joint were not impaired.

Case 23. Miss J. McD. Diagnosis, fracture of the patella.

Summary of history. Patient gave a history of injury to the knee. There was a localized pain on the outer side of the patella and nowhere else.

Radiogram revealed a small chip fracture on the outer side of the patella.

Case 24. Mr. M. Diagnosis, fracture dislocation of the external semilunar cartilage.

Summary of history. Patient had an injury to the knee six months before he came under our observation. He had been told that he had a sprained knee.

Examination revealed a hard prominence on the outer side of the knee just above the head of the femur. This was painful when palpated. When he flexed his knee, it was difficult to tell whether the prominence was attached to or sprung from the external condyle of the femur or the outer side of the tibia. Radiogram did not reveal evidence of bone damage.

At operation we found a dislocation of the external semilunar cartilage. This was removed and the patient now has a perfect functioning knee.

Injuries about the ankle are of particular interest, as we find that that is the location where most men are willing to make a diagnosis of sprain, apparently with the least amount of hesitation.

A few of these cases may be introduced with profit.

Case 25. Miss McL. Diagnosis, fracture of the scaphoid.

Summary of history. The patient, a trained nurse, stepped from a street car, walked to her room and the next morning reported she had sprained her ankle.

Examination revealed no swelling of the foot, but she had pain when she walked. There was localization of pain over the scaphoid. The picture revealed a fracture of this bone.

Case 26. Mrs. Z. Diagnosis, fracture of internal malleolus.

Summary of history. Following injury to the ankle patient was treated for a sprain. When she came under observation there was a great deal of swelling about the ankle, pain over the internal malleolus and limitation of weight bearing.

Radiogram showed a fracture of the internal malleolus.

Case 27. Miss S. M. E. Diagnosis, fracture of external malleolus.

Summary of history. Injury resulted from turning ankle, as she thought. Came under observation immediately afterwards.

Examination revealed pain, swelling. Pain localized over the tip of the external malleolus.

Radiogram requested. Picture revealed a fracture of the external malleolus.

Case 28. Mrs. H. Diagnosis, fracture of the second and third metatarsal.

Summary of history. Injury to foot. She was treated in an institution, where she was told she had a sprained ankle and all that was necessary to do was to soak feet in hot and cold water. This she did for one month. During this time she complained of great pain in the foot, particularly on weight bearing.

When she came under observation the foot was greatly swollen. No alteration in the relationship of bony landmarks about the ankle. There was pain, however, over the second, third and fourth metatarsal.

Radiogram revealed a fracture of the second and third metatarsal.

Under treatment the pain has disappeared. The swelling has entirely gone, and the patient now is able to bear weight without any discomfort.

CONCLUSIONS

I believe that enough has been presented to prove my point that the use of the terms sprains and contusions, should be reserved for those cases in which no definite injury of bony structure can be proven to exist.

SURGICAL COLLAPSE OF THE LUNG*

AN IMPROVEMENT IN THE TECHNIC OF THE ANTERIOR REMOVAL OF THE FIRST RIB WITH AVULSION OF THE PHRENIC NERVE, SECTION OF THE LONG THORACIC NERVE, AND TENOTOMY OF THE SCALENUS ANTICUS AND MEDIUS MUSCLES.

JAY R. COFFEY, M. D.
PORTLAND, ORE.*

The necessity for the removal of a portion of the first rib to obtain surgical collapse of the lung is too well known to require comment. By the Sauerbruch and other methods the first rib was removed from behind, a procedure which involved great trauma to the shoulder blade and considerable danger of injury to the subclavian vessels. Enumeration of the benefits of phrenic neurectomy to partially produce immobility of the diseased lung is trite.

The author, from a study of cervical rib[1], conducted with Dr. A. W. Adson, saw the possibility of removing the first rib by slightly enlarging the phrenic neurectomy incision. About the same time, observing the frequent reference of operators to the importance of preserving the long thoracic nerve in radical amputations of the breast, his interest was drawn to the long thoracic nerve and he wondered why it was important to preserve it. The literature showed but three articles on the nerve of Bell, including Sir Charles Bell's original description. No one seemed to know much about this nerve. The anatomic literature considered it as primarily involved in elevating and externally rotating the arm by means of the serratus anterior muscles and doubted its function as a nerve of respiration.

The long thoracic nerve was experimentally cut upon many dogs and it was found that within a day or two, after the soreness of the operation had worn off, the movement of the forelimb was unimpaired. The dog, without a clavicle, that depends upon the forward movement of its forelimb in walking and running, would be more apt to be hampered by the loss of the action of the serratus anterior muscles than would the human, but he was able to run and frolic after the severance of the long thoracic nerve as well as before.

Therefore, it was shown that the serratus anterior muscles have little to do with the elevation and external rotation of the forelimb. The only alternative action for these muscles is the flaring out of the thorax with the inner border of the scapula as an anchor. Upon this assumption, during four radical breast operations, the long thoracic nerve was purposely cut. Elevation and external rotation of the patient's arm upon recovery from the operation were no more affected than if the nerve had not been cut.

Tracings were made of several dogs' thoraces, where there had been severance of the long thoracic nerve on one side, and upon forced respiration the movement of the chest on the side on which the long thoracic nerve was severed was greatly diminished. Therefore, the function of the long thoracic nerve as an accessory and perhaps an ordinary nerve of respiration was proven as claimed by the original describer, Bell.

Then why not, by the same route used in producing phrenic neurectomy, remove the desired amount of first rib, cut the long thoracic nerve and cut the scalenus anticus and medius muscles, thereby allowing the apex of the lung to gradually collapse? Hedblom recognized the importance of gradual collapse, sometimes making five, six or more operations in order to produce the desired effect.

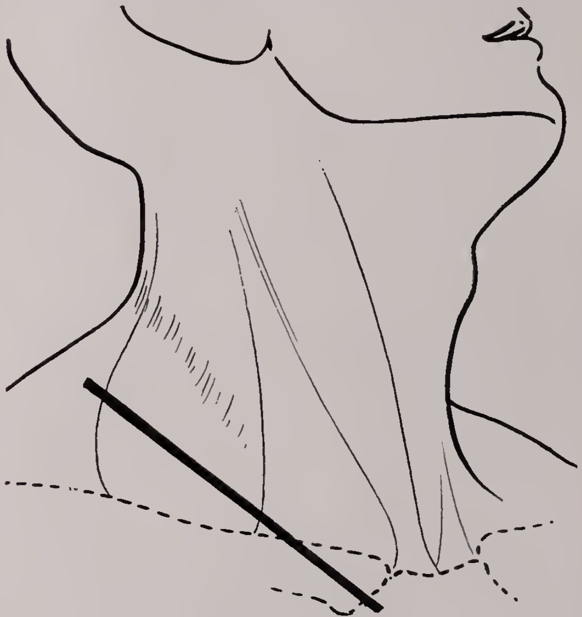

Fig. 1. Diagram of external surface of posterior triangle of the neck, showing the line of incision.

An aged patient appeared with a lung abscess. He could not live on without surgical interference. His condition was such that even a minor rib resection might be fatal. He had two years previously had a paralysis of the arm and leg upon the same side as the lung abscess. His family was advised of the seriousness of any operation and of the possibility of the anterior removal of the first rib as the first stage, which, if survived, would make the later collapse more easy. They agreed that it should be attempted. This operation has been previously described.[2]

An incision was made from the trapezius muscle to the middle of the manubrium sterni, bisecting the angle between the clavicle and the base of the neck (fig. 1). The incision penetrated the skin and platysma and when retracted disclosed the external jugular vein and its branches. The branches were ligatured and cut as shown in figure 2.

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* Read before the Fifty-fourth Annual Meeting of Oregon State Medical Society, Portland, Ore., Sept. 20-22, 1928.

* Section of Surgery of the Head, Neck and Thorax of the Dr. Robert C. Coffey Clinic.

The posterior three-fourths of the clavicular attachment of the sternocleidomastoid muscle was cut near the clavicle, leaving enough of the muscle for reattachment. The flap of the sternocleidomastoid muscle was retracted forward and with it the distal portion of the external jugular vein. This disclosed an area of fat and lymph glands, which when carefully dissected out revealed the plane of the anticus muscles.

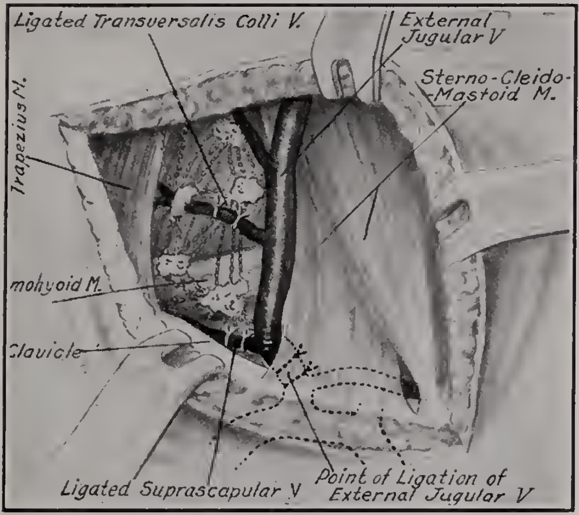

Fig. 2. The skin and platysma have been retracted, disclosing the external jugular vein and its branches. Points of severance are indicated. The omohyoid muscle is seen through the lymphatic and fatty space behind the sternocleidomastoid muscle.

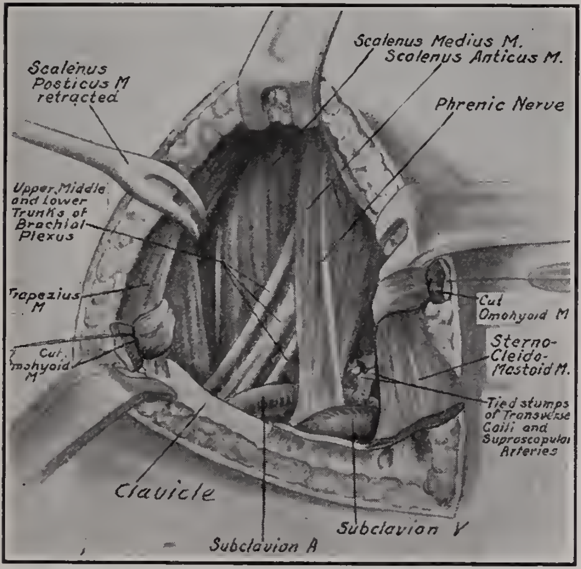

Fig. 3. The transverse colli and suprascapular arteries have been ligated and cut. The omohyoid has been cut and traction sutures attached to its ends to act as retractors. The lymphatic and fatty tissues have been dissected away, exposing the lateral region of the first rib.

There lay the subclavian vein, passing over the first rib in front. Behind it and between the subclavian artery, attached to the first rib, was the scalenus anticus muscle with the phrenic nerve dipping mesially behind its lower anterior attachment. Through the same division between the scalenus anticus and medius muscles came the brachial plexus above the subclavian artery. Behind it, as the rib turned upward and backward, was attached the scalenus medius muscle with the long thoracic nerve running down the center of its posterior external border (fig. 3).

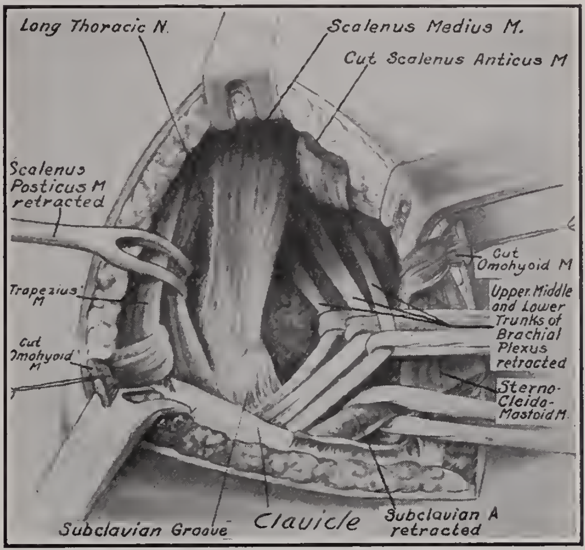

Fig. 4. The scalenous anticus muscle has been cut and retracted upward. The phrenic nerve has been avulsed. The subclavian artery has been retracted into the space formerly occupied by the scalenus anticus muscle and the brachial plexus has been retracted forward, uncovering the subclavian groove. The long thoracic nerve is seen coming through the scalenus medius muscle, running down its lateroposterior side and crossing the first rib.

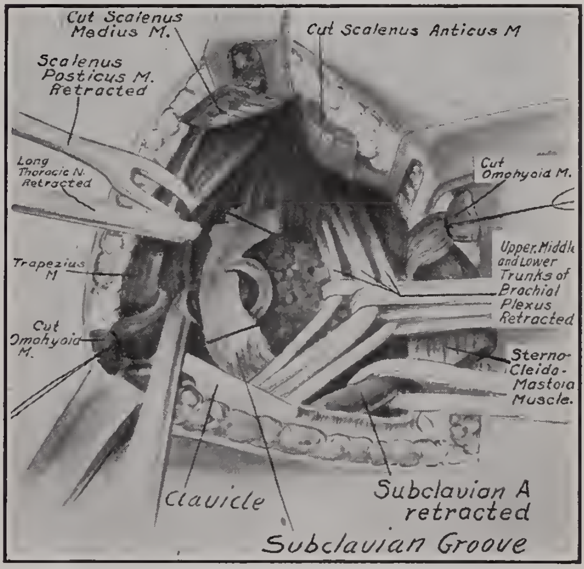
Cut Scalenus Medius M.
Cut Scalenus Anticus M
Scalenus Posticus M. Retracted
Long Thoracic N. Retracted
Cut Omohyoid M.
Trapezius M
Upper Middl and Lower Trunks of Brachial Plexus Retracted
Cut Omohyoid M.
Sterno-Cleido-Mastoid Muscle.
Clavicle
Subclavian A retracted
Subclavian Groove

Fig. 5. The scalenus medius muscle has been cut, showing the inward and upward curving of the first rib. The long thoracic nerve is retracted. The lines for cutting the first rib, including a nubbin of the lateral process of the first thoracic vertebra, are indicated. The actual exposure is fully as good as shown here.

The phrenic nerve was avulsed. The scalenus anticus muscle was cut. The subclavian artery was drawn into the former position of the attachment of the scalenus anticus muscle, the brachial plexus was separated into its three trunks and each was drawn forward with gauze tape. Within could be seen the pleura and through it the moving lung. Behind, attached to the rib, was the scalenus medius muscle (fig. 4).

The scalenus medius muscle was cut from the rib and with it the long thoracic nerve. The muscle and nerve were withdrawn upward and the rib was exposed to beyond its articulation with the lateral process of the thoracic vertebra. The rib was stripped and cut as indicated in figure 5.

The omohyoid muscle, which had been cut as it passed through the above mentioned area of fat and glands and used to retract muscles, was tied together. The brachial plexus and subclavian artery were allowed to fall into the previous position. The sternocleidomastoid muscle was joined to its previous attachment. A small drain was inserted and the skin was closed.

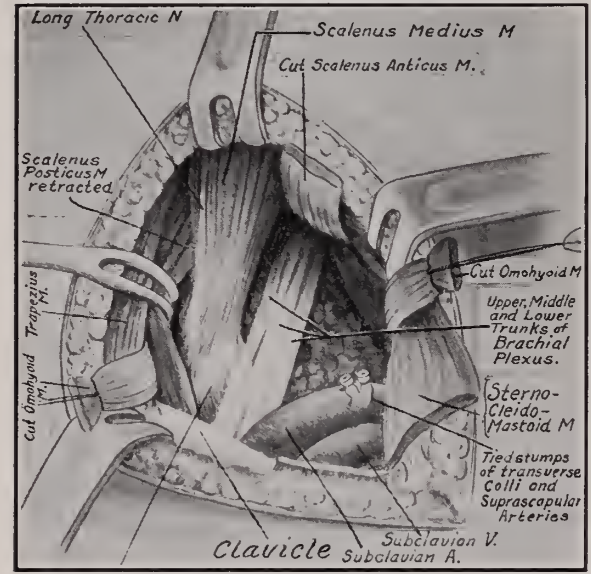

Fig. 6. The revised operation, in which the sheath of the brachial plexus is not entered nor are its trunks separated.

The old man recovered without shock. The wound healed. He had, as you will remember, previously had a paralysis of the arm on that side; therefore, no ill effects were noted.

The second case was one of cavernous tuberculosis. The operation was performed precisely as before, the only difference being that in the tuberculous case the pleura was thick and leathery, and, of course, no lung tissue could be seen through it. This patient experienced severe pain in the arm for several weeks following the operation. I had handled the brachial plexus too roughly, although I had thought at the time that we were using great care.

Immediately upon this came the third case, a woman with long-standing tuberculosis who had carried an artificial pneumothorax for several years, but collapse was impossible because of a large adhesion in the apex. The same operation was performed. Extreme care was used to handle the brachial plexus gently. The patient experienced very severe pain for several weeks following operation.

Therefore, we must leave the brachial plexus alone.

The fourth case was one of tuberculosis, in whom artificial pneumothorax was impossible because of gross adhesions. She had carried a continuously positive sputum for four years and had had but two negative sputums in six years. Her social condition was such that she must obtain relief if at all possible. I determined to entirely avoid the brachial plexus.

The exposure was made as in figure 3. No attempt was made to separate the three trunks of the brachial plexus. The phrenic nerve was avulsed. The scalenus anticus muscle was cut without touching the brachial plexus (fig. 6). The scalenus medius muscle was carefully cut away from its attachment to the first rib and with it the long thoracic nerve was cut (fig. 7). The rib was stripped from immediately behind the crossing of the brachial plexus. The latter was not touched and the rib was twice cut, immediately behind the subclavian artery and at its attachment to the vertebra, taking with the rib a small nubbin of the transverse process in order to prevent future rib formation. No periosteum was left. The remaining cut ends were rounded off. The wound was closed as before. The girl never had a bit of pain in the arm.

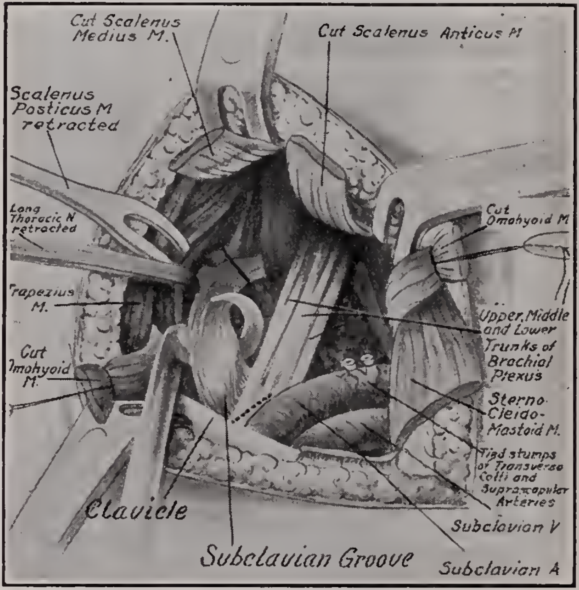
Cut Scalenus Medius M.
Cut Scalenus Anticus M
Scalenus Posticus M retracted
Long Thoracic N retracted
Trapezius M.
Cut Omohyoid M.
Cut Omohyoid M
Upper, Middle and Lower Trunks of Brachial Plexus
Sterno-Cleido-Mastoid M.
Tied stumps of Transverse Colli and Suprascapular Arteries
Clavicle
Subclavian V
Subclavian Groove
Subclavian A

Fig. 7. The revised operation, showing the points at which the rib is cut without causing trauma to the brachial plexus.

This procedure has been adopted as safe and satisfactory. Within ten days a posterior rib resection, involving from 10 to 20 cm. progressively of the ribs second to ninth, inclusive, was performed. This operation consumed thirty minutes total time. Had the first rib been removed posteriorly at the same time, a minimum of twenty minutes additional severe trauma would have been necessary. Immediately complete collapse resulted. There was very little shock. Gradually the base of the lung expanded after six or seven weeks, leaving the diseased area above collapsed. After three months we received the encouraging information that the girl's sputum was entirely negative and that she was rapidly gaining in health and strength.

The fifth case was one of advanced active cavernous tuberculosis of the apex, in which the entire cavity was located in the apex. The single first rib operation, which was performed by avoiding the brachial plexus, caused the patient very slight discomfort and resulted in complete quiescence and rapid improvement. In this case no further operation will be necessary.

The anterior removal of the first rib has by this technic been made practical and the method of choice for many selected cases where primary apical collapse is desired.

POSTTHYROIDECTOMY COMPLICATIONS AND SEQUELAE

A REVIEW OF 2200 CASES AT THE PORTLAND CLINIC*

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In any locality in which a physician may undertake the practice of medicine certain ailments and diseases will be found which, due to climatic and topographic characteristics, are particularly prevalent and constitute a colloquial problem. Our problem in the Pacific Northwest is goiter. It is, therefore, the duty of every physician in this locality, whether specialist or general practitioner, to become thoroughly grounded in the fundamentals of this condition, so that he may treat or see that proper treatment is instituted for the numerous goiters encountered.

Some idea of the progress made in surgery of the thyroid may be obtained from a review of the following figures which were secured from the records at St. Vincent's Hospital and are no doubt representative of the work in the other hospitals of this community. In 1910, 14 thyroidectomies were performed by one surgeon with 2 deaths, a mortality rate of 14 per cent. In 1924, 333 thyroidectomies were performed by eighteen surgeons with 12 deaths, a rate of 3.6 per cent, while during the past year of 1927 there were 524 such operations done by twenty-five operators with 3 deaths, the mortality rate being only 0.5 per cent. As one can see by a casual survey of these figures, there has been a steady increase both in the number of operations and in the number of operators, and a truly remarkable decrease in the mortality rate.

We may attribute this progress to three factors: first, to an increased knowledge by the physicians and laity of this community of our health problem of goiter; second, to advance in the judgment and technical skill of the surgeons; and third, to the better preoperative and postoperative care given the patients.

Although every phase of the subject of goiter has been discussed repeatedly in the literature during the last few years, the problems one encounters postoperatively have been perhaps the least stressed. For this reason we are going to consider some of the complications and sequelae of thyroidectomy which were met in a series of 2200 operations upon the thyroid gland at the Portland Clinic.

HEMORRHAGE

Hemorrhage will always be a terrifying thing to the operator. In thyroid surgery the danger of hemorrhage is ever present both during and after operation. The ligature on the superior thyroid artery occasionally slips during operation and when this occurs trouble begins. Not only does this artery bleed profusely, flooding the field and obscuring sight, but it nearly always retracts upward into the muscles, making it very difficult to pick up. Many surgeons, to obviate this annoying and necesasrily sloppy accident, put two clamps upon this artery, releasing one only when the other has been tied. This serves to prevent slipping during operation as a rule, but does not insure against the slipping of the ligature when the patient has returned to bed. Frequently a little muscle or gland is tied with the vessel and later these soft tissues are cut through by the ligature, due to movements of the head, thereby loosening the tie. We have for several years transfixed the superior pole with a double ligature and since using this method have had no trouble.

We now use a combination of local and ethylene gas anesthesia. The gland is exposed under local anesthesia; then the patient is given gas while the gland is elevated and resected. Before the wound is closed the patient is allowed to come out of the gas. This usually causes some straining and coughing which will open any collapsed vein that might have been missed and the bleeding may be stopped, thus avoiding serious hemorrhage later. Since following this technic reopening the wound for hemorrhage has been much less frequent. In the total series of 2200 cases the wound was reopened and bleeding checked twenty times, or in 0.9 per cent. In thirteen cases the oozing was so difficult to control that the incision was left open and packed, closure being completed the next day. While these figures are somewhat alarming, it is encouraging here to recall that in the entire series but two deaths can be attributed to hemorrhage, and in one of these the thyroid was carcinomatous. As a matter of fact, the danger of bleeding is usually not so much due to the loss of blood as to the pressure of the clot upon the trachea.

TETANY

The occurrence of mild and transient tetany postoperatively has not been rare in our experience. In our entire series only a few (three–four) have gone on to the generalized convulsions and mental disturbances which are so alarming. Tetany in our cases has been due to three causes: (1) to removal of one or several parathyroid bodies; (2) to interference with blood supply of parathyroid bodies (edema and swelling shutting off blood supply temporarily); (3) to the disturbance of blood calcium which results from prolonged and persistent vomiting with great loss of HCl of the stomach and consequent alkalosis.

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* Read before the Fifty-fourth Annual Meeting of Oregon State Medical Society, Portland, Ore., Sept. 20-22, 1929.

One of the worst cases of tetany we had occurred preoperatively in a very toxic woman who had, in spite of all our efforts, vomited persistently for days. This patient had been kept alive by intravenous glucose solution for five days at the time of the onset of tetany, and it was during the administration of 500 c.c. of glucose by vein that the attack began. Her arms suddenly became rigid and slightly flexed at the elbows, her hands assumed the typical tetanic contracture for a moment, then she went into a most violent generalized convulsion, losing consciousness, foaming at the mouth, breathing stertorously, the whole picture resmbling closely that of an epileptic seizure. Fortunately several nurses were present at the time, so we were able to hold one arm sufficiently quiet to continue the intravenous injection, while nurses were immediately dispatched for ampoules of parathormone and calcium chloride. The parathormone arrived first and was immediately introduced into the rubber tubing of the intravenous apparatus by means of a needle and syringe. The effect was instantaneous and most dramatic. At one moment we were struggling with a woman in the wildest convulsion, the next instant she relaxed, completely opened her eyes and spoke to us.

We have used this product (parathormone) several times, always with remarkable success, but its effect is only temporary. A recurrence of convulsions may appear in several hours if other means are not used. Calcium chloride in ampoules, 10 c.c. of 5 per cent solution, supplies not only the necessary calcium but also the chloride iron which is so imperative where alkalosis is to be overcome. Calcium lactate, parathyroid extract and sodium chloride intravenously are also measures of importance in the treatment of this condition. Cod-liver oil has been recommended for tetany and we have used it with some success in mild cases.

Brougher,[1] working with dogs at the University of Oregon Medical School, found that the administration of cod-liver oil to parathyroidectomized dogs delayed the onset of tetany and ameliorated its severity. Furthermore, he was able by the administration of cod-liver oil and yeast to cause blood calcium to return to normal and to relieve symptoms of parathyroid deficiency in two patients. The theory that cod-liver oil mobilizes the calcium of the body so that it can be used is apparently substantiated by his work.

Formerly, when we did total thyroidectomies for malignancy of the thyroid, we carried a number of patients through a period of years without evidence of parathyroid or thyroid deficiency by feeding them tablets of thyroid and parathyroid extract. We have never had any trouble controlling long standing tetany or potential tetany of this type with these tablets, although they must be taken daily or several times a week. In recent years we have found the use of radium for frank thryoid malignancy to give as good or better results than surgery, and have, therefore, practically abandoned total thyroidectomy for this condition. Adenomata with malignant degeneration are enucleated when this is possible, however. With radium we have never had tetany develop.

Terry[2] of San Francisco has written much recently regarding the danger of removing parathyroids inadvertently during thyroidectomy. He has forcibly impressed this danger upon many of the surgeons of this country by personally demonstrating parathyroids in the excised thyroid tissue after operation. Nearly all operators since the publishing of his findings are being more careful to avoid these small bodies which look like lymph glands and are closely associated with the large vessels, particularly those of the inferior pole.

RECURRENT LARYNGEAL NERVE INJURY

Injury to the recurrent laryngeal nerves is one of the most serious accidents that can occur. Where both nerves are destroyed bilateral abductor paralysis results, the vocal cords assuming a constant position of adduction, leaving an insufficient breathing space. An intense dyspnea follows, which, unless relieved, will go on to severe bronchitis and death. Frazier[3] reported twelve such cases upon which he had operated, anastomosing the severed end of the recurrent laryngeal nerve to the descendent hypoglossal nerve. At the time of his report, which was several years ago, a partial restoration of function with resultant diminution of dyspnea had been observed. We have been unable to learn the final outcome of these cases.

In our series a number of cases of unilateral and three cases of bilateral nerve injury have been encountered, only one of which we were accountable for. The case in which we injured the nerves was that of a large, adenomatous goiter with carcinomatous degeneration, for which we did a total thyroidectomy. The patient was a feeble old lady who refused to allow us to perform a tracheotomy when her dyspnea developed, and about a month after she left the hospital she died of pneumonia. The other two cases of bilateral nerve injury had been operated upon elsewhere and came to us for relief of dyspnea and loss of voice.

One of these was pregnant and following tracheotomy successfully went through labor and is now, some two years later, supporting herself by working as a stenographer. She was taught to clean and change her tracheotomy tube and by constant practice has developed an audible speaking voice so she does very well. The development of an audible voice after paralysis of the true vocal cords has been attributed by some to the assumption of function by the false cords.

The last case was brought into the hospital in a moribund condition as result of complete adduction of the cords. A hasty tracheotomy and artificial respiration brought her back. She had been having much trouble breathing for some time, when suddenly the larynx completely closed. Tracheotomy should be performed as soon as bilateral nerve injury is discovered, even though at the time dyspnea is not serious. to prevent any such dangerous occlusion of the larynx. In this case and in four others anastomosis of the severed ends of the recurrent nerve to the descendent hypoglossal nerve was done as described by Frazier. We secured no beneficial result in any of the five.

We have also tried laryngeal fissure with removal of the vocal cords for this condition, with some temporary benefit, but not enough to justify discontinuance of the tracheotomy tube. The difficulty we had with this procedure was the formation of excessive granulations which grow out and shut up the larynx almost as efficiently as the adducted cords. A number of plastic procedures have been suggested by various authors during the last few years but they have been uniformly unsuccessful when tried. The general concensus of opinion today among surgeons of this country favors treatment by simple tracheotomy. In a number of these cases, after a more or less prolonged period (one to three years), the vocal cords will assume the cadaveric position half way between adduction and abduction, indicating that paralysis is complete. When this occurs, due to the widening of the space between the cords, frequently the tracheotomy tube can be discarded.

The destruction of one recurrent laryngeal nerve causes no serious difficulty. There may be a temporary aphonia followed on recovery by a somewhat harsh voice, but eventually the remaining cord compensates and no serious dyspnea results. There should never be any excuse for damage to the recurrent nerves, if they follow their usual course. We know about where they should be in the groove between the trachea and esophagus and make it a point never to approach this region. Sometimes, however, the nerve is displaced by an irregular adenomatous growth of the thyroid, or it may follow a congenitally anomalous course. When this occurs, in spite of the greatest care injury may occur. We have seen a dissection of the recurrent laryngeal nerve by the instructor in anatomy at the University of Oregon, in which the nerves passed directly superior to the normal gland. One could scarcely avoid injury to such misplaced nerves, should operation have been necessary. Fortunately, such malposition of the nerves is extremely rare and generally speaking bilateral recurrent laryngeal nerve injury remains one of the unforgivable sins in surgery.

Anatomically the explanation of bilateral abductor paralysis is somewhat difficult; however, a working understanding of the action of the larynx that we have found useful may be obtained from the following description. There are two principal sets of muscles, one of which widens the glottic chink (the abductors) the other closing it (the adductors). All the intrinsic muscles of the larynx with the exception of the cricothyroid, a tensor, are supplied by the recurrent laryngeal nerve. Thus, when both recurrent laryngeal nerves are severed, one would expect the cords to assume a position half way between abduction and adduction and this is what occurs, but only after a more or less prolonged period of adduction. This phenomenon of bilateral abductor paralysis, following bilateral recurrent nerve injury, is stated in the Semon-Rosenbach[4] law which follows: "In all functional paralyses of the larynx the constrictors of the glottis (adductors) are almost always affected; in all organic and progressive organic paralyses, whether central or peripheral in origin, the dilators of the glottis (abductors) are at first or exclusively affected."

From a review of these facts it will be seen that the chief object in the treatment of bilateral recurrent nerve injury is to keep the patient alive and comfortable through the period of adduction until complete paralysis occurs and the cords assume the neutral or cadaveric position which permits sufficient breathing space. This we think is best accomplished by tracheotomy.

Some benefit may possibly be secured by removal of the cricothyroid muscles or cutting the branches of the superior laryngeal nerves which supply them. This tensor muscle has some tendency to hold the cords in adduction once that position is assumed. Cutting the main trunk of the superior laryngeal nerve is a very serious procedure, as this nerve supplies sensation to the larynx and also supplies the muscles closing the epiglottis. If this nerve is severed, food can pass directly into the larynx and no coughing reflex will be set up until it passes into the trachea below.

EMBOLISM

Embolism is usually not considered as an important complication of thyroidectomy, but it has proven so in our series. We have had six cases of this dreaded condition with five deaths. This means that in our series of 2,200 operations we have had one death from this cause in every 440 cases coming to surgery. There were four cerebral embolisms, one of which recovered with, however, a residual right sided hemiplegia; one pulmonary emmolism, and one embolism which lodged in the superior mesenteric artery.

The origin of the emboli in at least some of our cases we think might be traced to the small clots which form during the period when the poorly functioning, decompensated heart allows marked stagnation to occur in some of its auricular recesses. As the heart improved and the chambers are more completely emptied, any loosely attached thrombi may then be shaken free into the general circulation.

Sir Thoma Lewis[5] explains this possibility with great clarity. Writing on this subject, he says, "In postmortem examinations of hearts which have suffered with auricular fibrillation, the virtual paralysis of the auricles and the consequent stagnation of the blood in them definitely predisposes to thrombosis in the appendices. As long as the blood stream is very weak and slow, the clots do not shift their position, but when the heart improves and goes more slowly and firmly, then is the time a pulmonary infarct is apt to come about."

In our deaths auricular fibrillation occurred twice, and in every case the heart was widely dilated. It is also true that embolism occurred with one exception in from five to eight days following operation, or at a time when sufficient heart improvement might have set up some such train of events as suggested by Sir Thomas Lewis. It is of interest to note that the only patient to recover had a normal blood pressure and that all the others had hypertension of a marked degree.

There has never been a satisfactory treatment for this condition, although various suggestions have been made from time to time. From our experience embolism practically never occurs following thyroidectomy except in cases complicated by serious heart failure. The mortality in these thyroid cardiacs is always very high and many times it is a question as to how best to treat them. If left alone they are invalids with a few months to a year to live. If operated upon, a mortality rate of from 25 to 30 per cent is as much as can be expected, and embolism has been an important cause of death in our cases.

PNEUMONIA

Postoperative pneumonia, since the oxygen tent has been made practical for bedside use, is a far less appalling condition. Wilder[6], at Rochester, has been using this apparatus for several years with remarkable reduction in the mortality. The oxygen content of the inspired air can be maintained successfully at a 40 to 60 per cent concentration. This will successfully control anoxemia and within twenty-four to forty-eight hours usually brings about a crisis. The oxygen is passed through an ice chamber so that the cool fresh air in the tent in itself acts as an antipyretic.

Shortly after our tent arrived we had a child of eleven develop a lower lobe consolidation, following the resection of a very toxic goiter. Her temperature rose to 104° by axilla, her pulse was estimated to be about two hundred beats per minute, and her respiration was fifty. She became very cyanosed and was semiconscious, having a pneumonia and a serious postoperative thyroid storm to fight at the same time. We put her in the tent and within a few minutes observed that her dyspnea was lessening. Within several hours her respirations were normal and her color good. She was left in the tent three days, at the end of which her pulse, temperature and respirations were normal and her lung consolidation had cleared up. We feel that her life was undoubtedly saved by means of this apparatus.

Although we have had little experience with it, reports by Wilder, Boothby[7] and others indicate that the oxygen tent is of great value in the treatment of thyroid crises as well as pneumonia. Its importance in the handling of this dangerous condition, according to these authors, is second only to the use of Lugol's solution.

MISCELLANEOUS

Hypothyroidism of mild degree postoperatively is a common occurrence. It may be associated with swelling of the ankles and puffiness of the eyelids, but as a rule true myxedema rarely develops. Nearly always in from three to six months all symptoms of hypothryroidism will disappear. If, however, these symptoms persist, thyroid extract will readily control them. We feel that the best results in hyperplastic cases are obtained when some degree of hypothyroidism occurs temporarily postoperatively.

Hyperthroidism postoperatively is of serious import. The great majority of all cases will lose all evidence of toxicity in from three to six weeks. A few will have some persistent tremor and occasional tachycardia as long as three months after the operation. If there are any symptoms of hyperthyroidism after the third month, it is usually an indication that either too little gland was removed or recurrence has begun. Lugol's solution will control some of these cases, but if unsuccessful, a second operation with more radical resection is necessary to effect a cure.

Severe exophthalmus demands the most painstaking care, lest partial or complete blindness result. As a rule within a few days after operation recession to some extent begins. In one of our cases, however, exactly the reverse occurred. A patient with a severe exophthalmus following operation became increasingly worse until her eyes were literally protruding from their sockets and partial blindness resulted. It demanded all our ingenuity and constant nursing care in darkened rooms for weeks to save this woman her eyesight. Finally, just when we were about to give up hope, the turning point came and her eyes began to recede. She still has a pronounced exophthalmus two years after the operation, but her sight is unimpaired.

This paper by no means pretends to be an exhaustive treatment of postthyroidectomy complications and sequelae. We have, however, touched upon some of the important points which might be placed under such a heading, feeling that as our knowledge of these difficulties increases the mortality and morbidity of the operation of thyroidectomy may be reduced to a much lower rate than that in which we take pride today.

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FIFTEEN YEARS EXPERIENCE WITH SPINAL ANESTHESIA*

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After fifteen years experience with spinal anesthesia we have come to the following conclusions: First, spinal anesthesia has a very definite place in surgery; second, in a large number of cases it is the only anesthesia that makes an operation possible and safe in that particular case. (I am referring to cases such as stomach resection, operation upon the large bowel, prostatectomies and any operations on seriously shocked patients, where general anesthesia would have to be too prolonged to be considered safe and where the field of operation would be rather extensive and the discomfort to the patient too great for local anesthesia); third, spinal anesthesia is becoming more and more generally used and my prediction is that it will become a method of procedure used with considerable regularity in our hospitals before many years; fourth, spinal anesthesia as we have now learned to use it, is reasonably safe; fifth, it has certain advantages in certain cases that cannot be obtained in using ether, nitrous oxide, ethylene or local anesthesia.

In these fifteen years we have had 152 cases, with 2 fatalities. These occurred during the present year, 1928, and both were due to errors in technic which can be avoided. We operated on our first case under spinal anesthesia in 1913, using stovaine. We then went to apothesine and finally to novocain. Novocain is the only drug we have ever felt satisfied with. We consider it safe.

As to our method. Until recently we have had the patient sitting up on the operating table, feet resting on a stool, back arched. We locate the fourth lumbar vertebra by stretching a sterile towel between the two iliac crests and marking with our finger nails where this towel crosses the spinal column. This area has been previously sterilized and painted with iodine and shows a finger nail marking very clearly. We then decide which space we will enter in doing our spinal puncture.

For all work on the extremities and perineum we go into the fourth lumbar space. For hernias and work in the inguinal region, the third space. For other work below the navel but above the inguinal region, such as appendectomies and pelvic work, the second space. We have never given spinal anesthesia above the first lumbar space, that is, between the twelfth dorsals and last lumbar spines. We have never attempted to do work above the diaphragm under spinal anesthesia.

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* Read before the Fifty-fourth Annual Meeting of Oregon State Medical Society, Portland, Ore., Sept. 20-22, 1929.

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We have been able to explore the entire upper abdomen, including the diaphragmatic surface of the liver and spleen and to do operations on the stomach and gallbladder without the slightest discomfort to the patient by using the first lumbar space. Why go higher? This use of the different lumbar spaces is not absolute. In general we use the lowest space for the lowest anesthesia desired but do not hesitate to go to a higher space, if it is easier to enter with the needle. We have not knowingly, however, gone above the first lumbar space.

Until March, 1928, we induced spinal anesthesia by dissolving novocain crystals in the spinal fluid and injecting the same. About this time we received a solution put up by Merck & Co. and used by Dr. Geo. Pitkin of Teaneck, New Jersey. We were so impressed with his results that since that time we have been using this solution which is now put out by Merck & Co. under the name of spinocain. Our technic is as follows:

The preoperative preparation of the patient is simple. A light supper the night before. No food the morning of the operation; one-sixth grain of morphine two hours before and repeated one hour before the patient goes to the operating room.

In the operating room quiet prevails. Patient's ears are stuffed with cotton and a wet towel is placed over the eyes.

The operating table is always arranged with the head lower than the foot. The patient lies on the table on his side, head slightly lower than the rest of the body. The spine is prepared in the lower dorsal and lumbar region. Ampule No. 1 of the spinocain solution is opened and injected with a small caliber needle and small hypodermic into the skin and then into the deeper tissues in the lumbar space in which we intend to make our puncture. A nick is then made in the skin with a scalpel and the spinal needle is slowly introduced, feeling its way along between the spinus processes until the dura is entered. About thirty drops of spinal fluid are allowed to flow from the needle.

Then the syringe containing spinocain solution No. 2 is attached to the lumbar puncture needle. More spinal fluid is allowed to flow out and mix with the spinocain solution and the mixed solution slowly injected into the spinal canal. The needle is then withdrawn, a piece of adhesive placed over the punctured opening and the patient turned flat on his back. By the time the field of operation is prepared one is ready to proceed with the operation.

The spinal puncture needle should be small. No. 22 gauge is preferable and it should be bevelled. It is small to prevent postoperative leakage of spinal fluid and subsequent headaches, and bevelled so as to enter the dura, leaving a trap door flap for a more perfect closure when it is withdrawn and bevelled so as not to injure the structures of the spinal cord.

As to the solutions. No. 1 is introduced for local anesthesia in the skin so as to make lumbar puncture a painless procedure and, inasmuch as it contains ephedrine, it prevents the fall in blood pressure which heretofore has been so marked and has made spinal anesthesia so dangerous.

The thirty drops of spinal fluid are allowed to drop from the needle so as to equalize the pressure within the canal. After attaching the syringe containing solution No. 2, about 5 to 10 c.c. of spinal fluid are drawn forth, providing we wish to do upper abdominal work and, therefore, disseminate our solution further up and down the cord. The more spinal fluid we draw forth, the higher up we will carry our anesthesia. This is further regulated, however, by the position of the patient on the table. The head of the table should always be lower than the foot. Trendelenberg position is most suitable in spinal anesthesia with this solution which is lighter in specific gravity than the spinal fluid. For the highest anesthesia, namely upper abdominal work on the stomach and gallbladder, the head of the table is raised so that it is almost level with the foot.

Anesthetist assumes his position at the head of the table with a blood pressure apparatus and makes his observations on the pulse, blood pressure and general condition of the patient as the operation proceeds. If the patient's mind is on the operation (and you may be sure it generally is), it is the anesthetist's duty to divert it with appropriate conversation. This, to my mind, is a factor of great importance, especially with women patients. They are apt to get in an extremely nervous state, if allowed to lie there and imagine what is happening to them.

This paper would be incomplete if we did not compare spinal anesthesia with other methods.

First, as to local anesthesia. Nothing is safer than this, but spinal anesthesia does have some advantages over local. The patient is more comfortable under spinal. The anesthesia is more complete and, if the patient's mind can be gotten off the operation, he is an ideal operative case both to himself and to the surgeon. In spinal anesthesia there is absolutely no pain. In local there is apt to be considerable discomfort.

Compared with nitrous oxide and oxygen. Under spinal anesthesia the patient does not lose consciousness. Also, his relaxation is complete under spinal. Under nitrous oxide and oxygen and under ethylene and also under local the relaxation is most incomplete, and anyone who attempts to operate without relaxation knows that the simplest operation can be made the most difficult under these conditions. And, further, after anyone has operated with the complete relaxation one gets under spinal, he is never willing to give up this method of anesthesia.

Spinal anesthesia is indicated in the following cases: First, patients with bad hearts, bad kidneys or bad lungs, where the danger of general anesthesia is more than that of the operation itself; second, cases which are too extensive for local anesthesia and not suitable for general, such as old people needing an amputation, prostatectomy, work on the large intestine or stomach resection, intestinal obstruction, etc.

Spinal anesthesia may be used in the following cases: First, all operations below the diaphragm. It is true that occasionally we do not get the complete anesthesia we expect from spinal or we find that it does not last throughout the entire operation. There is, then, no contraindication to giving a little ether or gas. We must remember that we are not attempting to do a "stunt" when we use spinal anesthesia, but are aiming to do an operation under safer conditions for the patient than it could otherwise be done. If the method does not fulfill its expectations in any particular case, we should not feel disappointed in the method because we have to reinforce it with some other method of anesthesia.

Let me emphasize again that spinal anesthesia is more difficult in women patients than in men. It is here that the importance of having a good conversationalist at the head of the table is quite evident.

Finally, I would caution against the indiscriminate use of spinal anesthesia. As stated before, I consider it a lifesaver in certain cases and the only method under which certain operations could be attempted with safety, *but to use it as a routine measure for all operations below the diaphragm or even for operations below the navel or on the lower extremity is all wrong.* It is wrong because the mortality of spinal is not yet proven to be as low as that of local anesthesia, gas, or oxygen and ether.

We have used spinal anesthesia in the following cases since January, 1928.

1. Jan. 24, 1928, herniotomy.
2. Jan. 24, 1928, herniotomy.
3. Feb. 24, 1928, herniotomy.
4. Feb. 27, 1928, herniotomy, femoral.
5. Feb. 28, 1928, herniotomy, ventral.
6. March 13, 1928, herniotomy.
7. March 13, 1928, resection of bowel.
8. March 13, 1928, herniotomy.
9. March 19, 1928, gastroenterostomy.
10. March 26, 1928, cholecystectomy, appendectomy.
11. March 26, 1928, herniotomy, left inguinal.
12. March 28, 1928, cholecystectomy.
13. March 27, 1928, resection stomach and posterior gastroenterostomy.
14. April 3, 1928, appendectomy.
15. April 6, 1928, gastroenterostomy.
16. April 6, 1928, herniotomy, bilateral, orchidectomy.
17. April 9, 1928, herniotomy, appendectomy, cholecystectomy.
18. April 9, 1928, appendectomy.
19. April, 16, 1928, herniotomy, double.
20. April 18, 1928, prostatectomy.
21. April 19, 1928, intestinal obstruction due to umbilical hernia.
22. April 26, 1928, heriotomy, right inguinal.
23. May 14, 1928, exploratory laperotomy.
24. May 21, 1928, appendectomy.
25. May 28, 1928, general peritonitis.
26. May 28, 1928, subhepatic abscess.
27. June 11, 1928, herniotomy, inguinal.
28. June 11, 1928, herniotomy, umbilical and inguinal recurrence.
29. June 5, 1928, ruptured gallbladder.
30. June 16, 1928, ruptured gallbladder.

LIVER EXTRACT IN TOXEMIA OF PREGNANCY. The total preeclamptic cases studied by Harold A. Miller and D. Ben Martinez, Pittsburgh (*Journal A. M. A.*, Feb. 23, 1929), number 255, of which they placed 101 in the mild group, ninety-five in the moderate group, and fifty-nine in the severe group. In this series there were eighty-four patients with nephritic toxemia, who, while not showing any improvement in the blood pressure or urinary condition, were nevertheless allowed to continue their pregnancies until they went into labor spontaneously. The authors used heparmone in the treatment of these cases. As would be expected in the treatment of any condition, the response varies with the severity of the toxemia. Even in the severe cases some improvement occurred without supplementary or symptomatic treatment, while in the moderately severe or mild cases, some were returned to a practically normal state. There are two mild reactions which may occur: (1) moderate headchae for about one hour after the injection, or (2) flushing of the skin and a feeling of warmth. One anaphylactic reaction occurred when 35 c.c. was given intravenously to a patient in whom an unsuspected sensitization to the drug existed. Many cases when first seen are in the severe group, and are so treated, afterward dropping to moderately severe or even mild toxmia, when they are treated accordingly. While the shifting from group to group is largely from the severe to the mild, an occasional case may show the reverse reaction. Four patients have developed eclampsia, one from the moderate group and three from the severe group. One fulminating toxemia proved fatal, the patient dying within ten minutes after the first convulsion. The histories of forty-five cases are published.

THE DECREASE IN MATERNAL AND INFANT MORTALITY IN OREGON *

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Twenty-five years have passed since the state of Oregon created a state department of health to preserve the life and health of its people. The governors have appointed the foremost and best informed physicians of the state to carry on a campaign of disease prevention. Maternity and infancy work has been under their direction and supervision (see table of organization). The infant mortality of a community is regarded by health authorities as a measuring stick of the efficiency of health work.

Trend of Infant Mortality in Oregon
Deaths Under One Year Per 1000 Live Births

1919	63
1920	62
1921	51
1922	58
1923	57
1924	54
1925	51
1926	52
1927	47.5

Fig. 1.

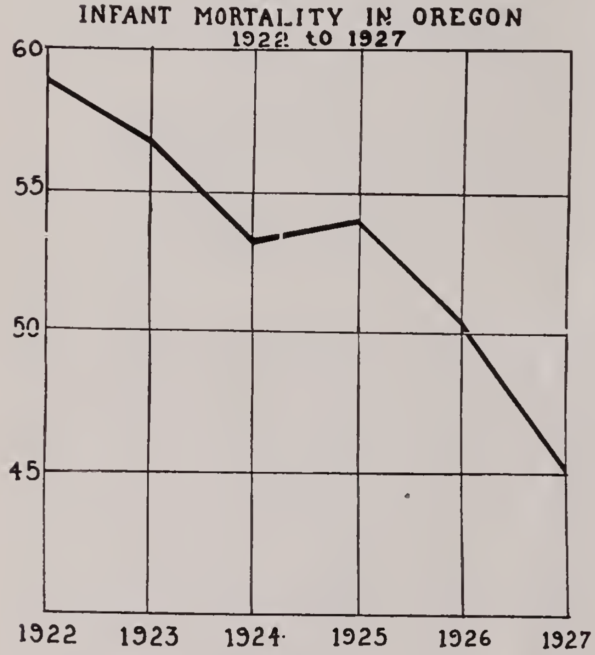

Fig. 2.

The infant death rate in the United States has decreased from 100 to the thousand live births in 1915 to 65 to the thousand in 1927. This means that one out of three babies doomed in 1915 is saved. "That's progress," states an editorial in Collier's. "The explanation is in the fact that, wherever the infant mortality is low, resolute health authorities and enlightened public opinion deserve credit." To the medical profession of this state cannot be given too much credit for decreasing the maternal and infant death rate. It is the cooperation of the voluntary health organizations with the physicians and the health departments that has given Oregon the lowest infant mortality rate in the United States.

INFANT MORTALITY
Per 1000 live births

	1919	1920	1921	1922	1923	1924	1925	1926
New Zealand	45	51	48	42	44	40	40	40
Norway	62	58	54	55	50	50		
Oregon	63	62	51	58	57	54	51	52
Australia	69	69	66	53	61	57	53	54
England	89	80	83	77	69	75	75	70
United States	87	86	76	76	77	71	72	73
Denmark	92	91	77	85	83	84	80	84

Fig. 3.

Maternity and infant hygiene form the most important activity of a conservative plan of health and disease prevention. In Oregon the infant death rate has decreased from 63 to one thousand live births in 1919 to 47 in 1927 (figs. 1and 2). In 1928 in Oregon the baby comes to a mother who is better prepared to care for him than the mother in 1903. A baby born in Oregon has a better chance to be healthy and live. The infant mortality of the state has been improving, yet New Zealand has a better record than Oregon (fig. 3). The mortality rate of babies not breast fed is four times as high as that of breast fed babies. When mothers realize the importance of breast feeding, the lives of many babies will be saved. A large number of babies die in the first month of life from causes originating in the condition of the mother. When the need of skilled medical and nursing care during pregnancy, confinement and the lying in period is better understood, and facilities for this care more widely available, the lives of many mothers and babies will be saved.

Nearly twenty years have gone since the movement for the prevention of maternal and infant mortality was taken as a definite and organized part of public health work. The previous efforts of the New York City Department of Health about 1908 have been supplemented from year to year by the addition of divisions of maternal and child hygiene to state and municipal departments of health, by the extension of public health nursing, the study and control of milk supplies of our state and cities and by marked advancement in teaching and practice of obstetrics and pediatrics.

The reduction of infant mortality over the past quarter of a century is probably one of the outstanding achievements of the life conservation movements. For the ten original death registration states the infant mortality rate in 1900 was 162 per thousand of the infant population. In 1926 the rate was approximately 80 deaths per thousand infants under one year. The reduction amounted to more than 50 per cent in the last twenty-seven years.

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* Read before the Fifty-fourth Annual Meeting of Oregon State Medical Society, Portland, Ore., Sept. 20-22, 1928.

Although much effective work has been done in Oregon, there are still many preschool children who show evidence of malnutrition, of uncorrected physical defects, of faulty hygiene and of poor mental habits. Great progress has been made in the scientific study of conditions affecting the health of children but much more remains to be done.

As our records prior to 1919 are incomplete, we must limit our statistics to the last ten years. It is evident, however, from the low rate of 63 per thousand live births that year, as compared with that of 100 of the United States, that considerable work had been done before this time. The greatest progress was made during the period when the state was aided by funds from the federal government and the International Health Board. Reducing the rate has been accomplished by following a system which attempts to reach every community in the state of Oregon.

In November, 1921, Congress passed the Sheppard-Towner Bill for the protection of maternity and infancy in the United States. The Oregon legislature accepted it by resolution in November, 1921, and made the State Board of Health its agency in cooperating with the Children's Bureau for the protection of maternity and infancy.

By its application this law makes itself more or less directly concern every physician. It was an effort to lessen the excessive maternal and infant mortality of this country. The law affords only instruction and advice. It may be considered to imply that there exists a condition which should be corrected and that the means for correcting it are at hand. These means are the knowledge of obstetrics and pediatrics existing in the medical profession. All instruction and advice in matters of maternity and infancy must be directly or indirectly referred back to the medical profession.

The Sheppard-Towner Act made sixteen thousand dollars available annually for maternity and infancy hygiene. This sum, however, was not sufficient to provide funds for an adequate program for the whole state. An attempt to distribute these funds equally all over the state would have resulted in a scattered and inefficient program. In order to concentrate the work the board adopted the policy of helping communities which would finance and sponsor an active program. The funds were, therefore, given to those who would match state and federal funds with equal amounts. This policy resulted in the active cooperation of counties in maternity and infancy hygiene. It also eliminated counties which were not prepared to carry on this work.

The International Health Board or Rockefeller Foundation made it possible to establish five full-time county health units in this state. These units consist of a whole-time health officer, two public health nurses and one clinical clerk. With sufficient funds, this work could be established in every community in this state. When you realize that we spend nearly one hundred dollars annually for every child that attends public schools and only a few cents for the preservation of the child's most valuable asset, health, you will begin to appreciate how much we neglect the welfare of our children who are the coming citizens and producers of future wealth. The most progressive policy that the State of Oregon could adopt at this time would be to appropriate sufficient funds for the establishment of a whole-time health department for every county in this state, which means an adequate plan for safeguarding the health of the mothers and infants.

To state that a subsidy for maternity and child hygiene is an invasion of dangerous paternalism seems a very weak argument, when we are still grasping for federal aid for good roads, harbors and agriculture. When we as physicians present a plan which will provide adequate care for every mother and child, then there will be no need of the state taking a hand. Before this can be done it will be necessary to train every physician in the art of preventing rather than curing diseases. However, the physician has benefited by the present system more than he has suffered. The correction of defects and prevention of disease will undoubtedly in time take the place of curative medicine.

Most of you are more or less familiar with the plan of the Oregon State Board of Health. However, in order to make it clear to all, I am presenting the following table which outlines the plan of our maternal and infancy hygiene work (fig. 4). The finances for this work were furnished by the International Health Board, the Children's Bureau of U. S. Department of Labor and the Oregon State Board of Health.

The physicians of this state cooperated through the state medical society, the local county and city medical societies, the public health league and the

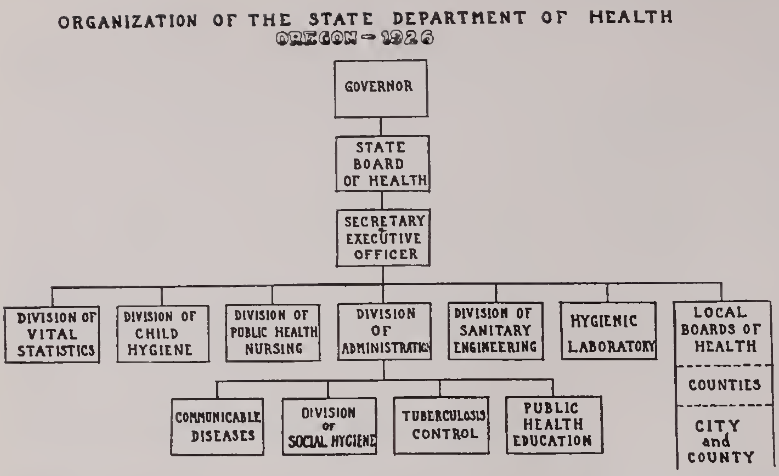
ORGANIZATION OF THE STATE DEPARTMENT OF HEALTH
OREGON - 1926
GOVERNOR
STATE BOARD OF HEALTH
SECRETARY EXECUTIVE OFFICER
DIVISION OF VITAL STATISTICS
DIVISION OF CHILD HYGIENE
DIVISION OF PUBLIC HEALTH NURSING
DIVISION OF ADMINISTRATION
DIVISION OF SANITARY ENGINEERING
HYGIENIC LABORATORY
LOCAL BOARDS OF HEALTH
COUNTIES
CITY and COUNTY
COMMUNICABLE DISEASES
DIVISION OF SOCIAL HYGIENE
TUBERCULOSIS CONTROL
PUBLIC HEALTH EDUCATION

Fig. 4.

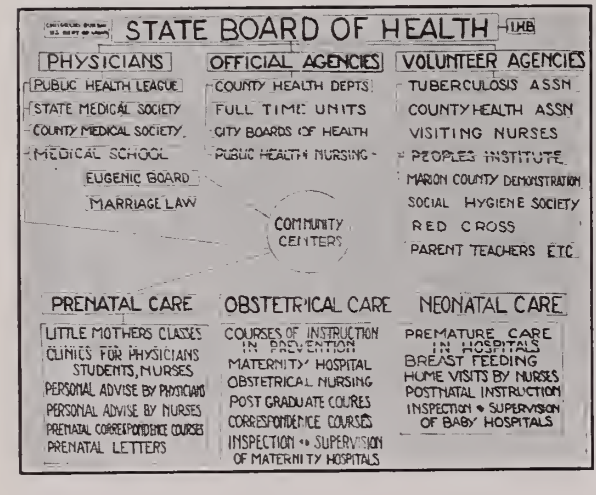

Fig. 5.

University of Oregon medical school. The official agencies engaged were the full-time health units, city and county boards of health. The unofficial agencies cooperating were the Oregon Tuberculosis Association, the County Public Health Association, Visiting Nurses Association, Marion County demonstration, Peoples Institute, Red Cross, Social Hygiene Society, Parent-Teachers and the Junior League (fig. 5).

In a model county unit all of these organizations cooperate through a community health center. The activities carried on in the center are divided into three groups, prenatal care, obstetric care and postnatal care.

Under prenatal care we have the instruction of high school girls in the organization of "little mothers' classes." The University of Oregon, through Dr. C. J. McCusker, conducted prenatal clinics for the instruction of medical students and nurses. You have just heard a report of the wonderful work done in this division. Every physician doing obstetric work could improve his practice by attending the clinics in modern preventive obstetrics.

Physicians have been encouraged to hold these clinics throughout the state. Over two thousand mothers are sent the monthly prenatal letter. A goodly proportion of the requests for these letters have come from physicians. Correspondence courses for physicians and nurses are in preparation.

Prenatal instruction has also been given by personal interviews by public health nurses. The physician, when there is one, is always consulted to see whether this instruction will be acceptable to him or not. All of this work must have the sanction and approval of the local society.

Better obstetric care has been demonstrated by the University of Oregon medical school in the prenatal and obstetric clinics. Briefly the courses cover prenatal care, obstetric technic and obstetric nursing.

Accidents of labor are undoubtedly precipitated frequently by interference with normal labor. The indications for parturition are not always well understood. Obstetric interference seems to be resorted to too frequently. Hurry in obstetric procedures should be considered from a standpoint of saving life instead of time.

Postnatal care is probably the most important factor in infant mortality. The first month includes over 40 per cent of the deaths of the first year of life. The services of the pediatrician should begin with the birth of the child. Some have suggested a new specialty to cover this period.

Our program has been entirely an educational one. Postnatal letters are sent to mothers with instructions for the first year of life. Again, the group or clinic method has been found useful.

An endeavor has been made to enlist the aid of every possible organization in the state. It is the intention of the board not to create any more new organizations except when they are needed. However, we realized that our efforts would not be successful unless we could reach the mothers and infants in every community. The ideal method was to divide the counties into community health centers of about five hundred and not to exceed one thousand. Smaller communities were reached through subcenters. Clinics, illustrated lectures and demonstrations are held at least once a month at the centers. The smaller groups send representatives to the center meetings. This plan was developed in Lane County. In every instance the local physician has been asked to participate and conduct these centers under the direction of the county health officer.

This solves the problem of making advice available to all. Only a very small percentage of these cases would consult a physician, if they were required to have a consultation in the physician's office. Every encouragement is given to a physician to hold prenatal and preschool clinics in his office. When a physician undertakes this work in a systematic and efficient manner, he can do it at fees that are quite reasonable. The fact remains, however, that the majority of physicians of today are not alive to the posisbility of preventive medicine.

Infant mortality can be reduced by a systematic instruction of mothers in the care of infants. The study of special problems of childhood have given us definite methods of applying preventive pediatrics. The conservation and preservation of life begins with the beginning of life and that is why good obstetrics is essential to preventive pediatrics. Prenatal care is essential, if we are going to reduce infant mortality especially in the first month of life. This begins with the knowledge that conception has taken place and this should be stressed, whether it is the first or last pregnancy.

Proper kinds of diet, amount of exercise, drinking plenty of fluids, rest, sleep and avoidance of strenuous exercise are necessary for the normal development of the child. The time to treat eclampsia is before it occurs. Nephritis should be controlled and treated in the same manner. Strict asepsis, intelligent technic, limiting interference to a minimum degree will do much to limit the number of cases of puerperal infection.

Why we neglect the health of our children on a huge scale is incomprehensible. Nothing is too good or expensive for our children is our boast, but still we are really very niggardly in our provision for their welfare. What sense is there in spending a hundred dollars for education and neglecting to spend a few additional dollars to safeguard the health of our children.

Dublin asks, are human lives worth saving? The infant born is an economic asset because it has cost money to bring him into the world and because, if he be allowed to reach maturity, he will produce more than he cost to bring up, plus what it will cost to maintain him.

The value of an American boy at birth is calculated to be more than $9,000. At the age of five the corresponding figure is over $14,000 and at the age of fifteen in excess eof $25,000. The figures are made on the basis of his maximum earning capacity of $2,500 annually. The wastage of children in Oregon amounts to more than a million dollars annually. This is the amount the State of Oregon would ultimately gain in saving their lives. By the test of dollars and cents child life is not cheap in America. The cost of illness is not less than five dollars per child per annum. This means a total loss of one and a third million dollars a year, the approximate cost of medical nursing and other care of children during illness.

Has it not been demonstrated clearly that maternity and child hygiene is the most important problem of public health work? The cost of prevention is small. An appropriation of ten cents per capita would insure an adequate and efficient program for this state.

The medical profession by virtue of their training should be the natural leaders of this movement. So far the laymen have done more to promote the appropriation of public funds for maternity and infancy hygiene than the physicians.

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AN INTERMEDIATE TECHNIC OF CHOLECYSTECTOMY

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While there are two standard methods for removing the diseased gallbladder, from the fundus inward and from the ducts outward, an intermediate technic to be described is of outstanding value, where the pelvis is greatly dilated and spread out over contiguous structures and otherwise obscuring the usual anatomic landmarks at the lower end of the gallbladder.

The not infrequent occurrence of dilatation of the lower end of the gallbladder, its pelvis, often throws obstacles in the path of both the up-down and down-up types of removal. It is in this type of cholecystic disease that an intermediate technic excells both the fundus-to-duct and duct-to-fundus types of cholecystectomy.

I first applied this method in 1925 in the presence of a markedly dilated gallbladder pelvis, where the organ contained over six hundred small stones. The pelvis was markedly dilated, especially posteriorly, and spread out over the bile radicals, adjacent blood vessels and hepatoduodenal ligament. Since that time whenever, indeed, similar manifestations in gross gallbladder pathology presented themselves, an intermediate technic was resorted to in order to facilitate cholecystectomy.

By an intermediate technic the crux of the problem in hand is instantly attacked. An incision is made only through the peritoneum just to the right of the duodenum and carried to the right, dividing at the origin of the cystic pedicle to course on either side of the gallbladder about one centimeter from the reflexion of the peritoneum from the liver on to it, meeting again at the apex of the fundus, the position of the incisions depending upon the area of raw gallbladder bed to be covered. The reflexion of the peritoneal flap is begun at the left lower border of the gallbladder and carried downward and to the left over the dilated pelvis to expose its superior border.

The dissection of the gallbladder from its bed is begun about two centimeters above where the cystic pedicle meets the visceral surface of the liver. The dilated gallbladder pelvis and cystic pedicle lying below this area are disescted free from underlying structures by continuing the dissection downward and inward, the lower portion of the visceral surface of the liver being the landmark for beginning this procedure. The dilated gallbladder pelvis is carefully freed from the hepatoduodenal ligament, ducts and vessels and the structures of the cystic pedicle which may course in an unnatural direction are identified.

As the dissection proceeds the bile radicals and blood vessels in this region are identified and injury to anomalous ducts or vessels is interdicted. Although the dilated gallbladder pelvis most frequently lies posteriorly, where it is attached to contiguous structures, a certain redundance may present anteriorly which may be seized with suitable hemostats and put gently under tension by traction downward and outward, while the dissection is being carried out. The structures of the cystic pedicle, the cystic duct and artery are separately identified, ligated and divided. With this step completed the balance of the procedure is carried out as duct-to-fundus removal.

501 Journal Building.

INTESTINAL OBSTRUCTION

SIMULATED BY A SEGREGATED CLOSED LOOP OF BOWEL. REPORT OF A CASE FOLLOWING BALDWIN OPERATION FOR THE CONSTRUCTION OF AN ARTIFICIAL VAGINA

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The earliest case of congenital absence of the vagina is credited by Burrage[1] to Realdus Columbus, who described this anomaly in 1752. Neugebauer, in 1895, collected a thousand cases.

Robinson[2] divides these cases into absence of the uterus, absence of vagina and absence of both uterus and vagina. He points out that postpubertal determination of sex is not always a simple matter.

When the surgeon is confronted with the problem of absent vagina, and the patient is anxious to have the defect corrected, it becomes his duty to assure himself that the subject is a female with all the attributes pertaining to her sex. It is then a debatable question, whether a woman should be subjected to an operation which carries considerable surgical risk in order to provide an organ which clearly cannot serve for giving birth and is suitable only for coitus. In the work of Paunz[3] and the manual of Doederlein-Kroenig[4] there are interesting discussions on this subject.

The explanation of the absence of uterus or vagina is found in a study of their embryologic development. In the adult the various subdivisions of the genital tract appear as distinct anatomic entities. In their embryologic state they form one continuous tube, which communicates with the urinary apparatus in front and with the terminal bowel posteriorly. As development progresses, the original tube undergoes variation in shape and size.

The skin depression, the epiblast, becomes deeper in order to meet the rectum to form the cloaca. This, then, divides into an anterior part, the urogenital sinus, into which the Müllerian ducts open, and a posterior part, the anus. This division is brought about by the growth of tissue downward between the hindgut and the allantois, and the perineum is thus formed. The urogenital sinus contracts at the upper part to form the urethra, while the lower part remains as the vestibule into which the vagina opens.

The formation of the uterus and vagina depends upon the proper and timely fusion of the Müllerian ducts which, lying on the ventrolateral surface of the Wolffian body at the caudal end of the embryo and entering the pelvis minor, remain for some time parallel to one another within the ligamentum inguinale. The union of both Müllerian ducts normally begins in the front of the tail and middle third of the ligamentum inguinale and finally forms the uterovaginal canal. This union begins in the second month of intrauterine life (Hertwig) and the point where the two Müllerian ducts first unite corresponds to the top of the future external uterine orifice. The parts of the Müllerian ducts above this point remain separate and become the salpinx; these below this point fuse to become the uterovaginal canal. If, at this time, because of some anamolous or disease process, the Müllerian ducts, instead of uniting and continuing to develop, become atrophied as in males, the final result is aplasia of the uterus and vagina, although the external genitalia (arising from a differentiation of peritoneal epithelium into the germinative type) may be unaffected, and continue to develop the normal secondary sexual characteristics.

Many operative procedures for vaginal reconstruction, most of which resulted in failure, have been undertaken. To Dupuytren, 1817, belongs the credit for the first attempt.

In 1904 Baldwin[6] first suggested the employment of an excluded loop of intestine as a lining for the new vagina, and thereby created a copulating channel which corresponded as closely as possible to a normal vagina. In 1910 the same author reported six cases in which he carried out this operation successfully.

This case is reported because of the unusual condition which developed twenty-four hours after operation and of the sequel.

Mrs. C. W., twenty-eight years old, married five years. The patient was of well marked feminine type with secondary sexual characteristics well developed. The external genitalia were normal. There was no vagina. Rectal examination showed absence of uterus.

Operation. Ether anesthesia, February 6, 1926. A transverse perineal incision 4 cm. in length was made, and bladder and rectum were separated by blunt dissection. The peritoneum was not opened. A forceps, with tip against the peritoneum, was placed in the newly constructed vagina, and held there by a gauze pack. The abdomen was opened. Uterus and ovaries were absent. A loop of ileum 30 cm. long, 20 cm. from the cecum, was segregated, the ends closed and inverted, and a thin tape placed around the center of the loop. The peritoneum was opened over the point of the intruding forceps. An assistant now grasped the ends of the tape in the forceps, and without difficulty drew the bowel downward until the bend in the loop protruded below the vaginal orifice. The peritoneum was closed loosely around the mesentery. There was very little tension on the mesentery and the blood supply seemed adequate.

The continuity of the intestinal tract was restored by end-to-end anastomosis, inasmuch as the approximation of the bowel in the position of a lateral anastomosis caused constriction of the mesentery of the resected loop. The abdomen was closed. The loop of bowel protruding from the vagina was secured in place with three catgut stitches, but was not opened.

The patient made a satisfactory ether recovery, was comfortable during the night, and at the time of the morning visit her condition was good. Shortly after noon the attendant nurse called, stating that the patient was vomiting and her pulse was rapid and of poor quality. Upon examination there was presented the appearance of severe shock. The abdomen was distended and tender. The pulse was of poor quality. Vomiting was protracted and severe. The stomach was washed and salt solution given intravenously with no improvement.

The loop of bowel protruding from the vagina was found to be tense and distended to a degree sufficient to prevent approximation of the thighs. It was incised, with the evacuation of about 30 c.c. of thin, brownish fluid and considerable gas. (There was no gangrene nor was there any slough of bowel later.) The relief was immediate, and recovery startling, rapid and complete. The vomiting ceased, abdominal distension subsided, and the condition changed within a few hours from one of extreme gravity to one of normal convalescence. The patient was discharged on the fifteenth day.

Several cases of Baldwin operation[7] have been reported, in which the intestinal loop was not opened until the third and even as late as the fifth day after the operation, without untoward symptoms.

Gatch, Trusler and Ayres,[8] following experimental work in intestinal obstruction, have concluded that the chief factors involved in producing death from bowel strangulation are necrosis of the bowel from pressure, gaseous distention of the bowel and obstruction of the mesenteric circulation.

All these conditions may develop in a closed loop of bowel, providing there be present bacteria in sufficient numbers to cause putrefaction of the stagnant intestinal contents. The toxin is a proteolytic[9] product of putrefactive bacteria which when absorbed exerts an action similar to histamine. This toxin is not absorbed through the normal intestinal mucosa,[10] but is rapidly absorbed through the lymphatics when there is sufficient gaseous distention to produce pressure.

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ARTERIAL HYPERTENSION

ANALYSIS OF 461 CASES *

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Arterial hypertension constitutes one of the most puzzling and controversial problems of present-day clinical medicine. The introduction of the arm-cuff mercury manometer brought with it an awakening of interest in vascular physiology and pathology. During the past two decades the researches of clinicians, physiologists, biochemists and pathologists have led to a new conception of the factors responsible for arterial hypertension.

In health as in disease the blood pressure is the result of two forces: first, the contraction of the heart muscle; and, second, the peripheral resistance produced by the arterioles. An elevated blood pressure, then, may be produced by increased output of blood by the heart or by greater resistance encountered in the arteriolar bed.

Early investigators believed that a general rise in blood pressure was prompted by local resistance produced by diseased renal vessels. However, in 1915, Sir Clifford Allbutt first described the condition known as essential hypertension. He felt that the earlier stages of this condition were marked by the presence of an elevated blood pressure alone, and that later there appeared as complications certain cardiac, arterial and renal diseases.

In the past ten years the intrarenal theory has found but little support, and evidence has accumulated more and more in favor of the theory that the rise of blood pressure is of extrarenal origin and due to generalized vasoconstriction. Whether this constriction is the result of a localized or a diffuse arteriolosclerosis or of the spastic effects of a retained metabolite in the blood forms the basis for the present-day controversy.

Starling demonstrated that a reduction in the amount of blood going through the vasomotor center in the medulla oblongata brought about a compensatory rise in the systemic arterial pressure through a systemic vasoconstriction. Bordley and Baker found that there is invariably a sclerosis in the arterioles of the medulla in men with hypertension and not in the controls who had a normal pressure, thus suggesting that a localization of the arteriolosclerotic process in the medulla may be the essential factor in the production of a systemic hypertension. Fishberg pointed out that in necropsies performed on seventy-two cases of essential hypertension there was always present a sclerosis in the terminal arterioles. O'Hare and Walker observed that the retinal vessels as seen by the ophthalmoscope were usually thickened in cases of essential hypertension.

On the other hand, Pal and von Monakow described cases, in which lesions of the arterioles of any consequence were not found at necropsy, and in some cases the lesions were no more extensive in patients with high blood pressure than in individuals of the same age without it. It may be argued that the necropsy findings represent the end results, and that, therefore, they do not solve the problem; likewise, that the thickening of the retinal vessels may be a result of the hypertension and are not a manifestation of the cause.

Major recently offered the theory that increased vasoconstriction was due to the presence of an abnormal amount of a spastic component in the blood. In patients suffering from essential hypertension and chronic nephritis he usually found a diminished output of the guanidine bases in the urine as compared with the normal controls. It was his belief that this substance, if produced in excess in the body or if not excreted properly by the kidneys, might cause a rise of blood pressure.

Other factors have been mentioned as the cause of arterial hypertension, such as the influence of heredity and modern living conditions, acute and chronic infections, chronic intoxications and endocrinal disturbances.

With this brief review of the present-day conception of arterial hypertension in mind I wish to present an analysis of a number of hypertension cases. These cases are representative of those types which are encountered by the average physician, and they offer a basis for comparing clinical findings with the newer etiologic theories.

Four hundred and sixty-one case reports were drawn from the files for an analysis merely because they could be found under the heading of hypertension. Later inquiry revealed that this number represented only about a third of the cases. The patients included in this series were observed during a period of ten years, ending in March, 1927. Many of them were observed only once or twice, while others were examined repeatedly. About one-third of the patients were hospitalized on one or more occasions because of hypertension and its complication or for other reasons. Many of them came to the clinic with complaints pointing to the hypertension or its complications, while in many instances hypertension was an incidental discovery.

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*Read before King County Medical Society, Seattle, Wash., Dec. 12, 1927.

*From the Mason Clinic.

The major part of the data used in this analysis was compiled from the record of the first observation, except for the repetition of laboratory tests, eye-ground examinations, death records and follow-up notes.

A systolic pressure of 150 millimeters of mercury and a diastolic pressure of 90 were taken as the minimum standard for hypertension. However, 44 cases were included which had a diastolic pressure lower than 90 millimeters.

It was a surprise to discover that about twice as many females were listed as males (292 females or 63 per cent, and 169 males or 37 per cent). The youngest patient proved to be thirteen years of age, in which case the diagnosis was acute glomerular nephritis with hypertension. The age of the oldest patient was eighty-two years, the diagnosis in this case being angina pectoris and hypertension. The largest group consisted of patients between fifty and sixty years of age.

TABLE I

AGES IN DECADES—461 PATIENTS

Decade	*Number of Patients*	*Per cent*
First	0	0
Second	5	1
Third	9	2
Fourth	41	9
Fifth	89	19
Sixth	156	34
Seventh	122	26
Eighth	38	8
Ninth	1	0.216

A study of the civil status revealed that nearly three-fourths of the patients were married (328 cases or 71 per cent). Fifty-two cases were single, seven divorced, and seventy-four widows or widowers.

The occupation of the patient was noted in 98 per cent of the cases. The majority of the famales had been engaged in housework (250 cases or 55 per cent); common laborers formed the next largest group (53 cases or 12 per cent); very few were professional men.

TABLE II

OCCUPATION—452 PATIENTS

Kind	*Number of Patients*	*Per cent*
Houseworker	250	55
Common laborer	53	12
Office worker	26	6
Farmer	20	4
Businessman	17	4
Salesman	13	3
Physician	9	2
Teacher	8	2
Engineer	5	1
Retired	5	1
Student	4	1
Nurse	4	1
Lawyer	3	0.5
Miscellaneous	35	7.5

It is true that the majority of the patients were females, and that most of them naturally designated their occupation as that of housework. However, one can hardly believe that the stress of their daily duties, unlike those of a professional man, was severe enough to be an important factor in the production of hypertension.

It has been emphasized that hereditary influence has an important bearing in the susceptibility to high blood pressure. The nervousness of the hypertensive patient is proverbial and usually this is an inherited trait. Often an abnormality in the arterial tree has been traced from one generation to another. In this study the family history was noted in 360 cases or 78 per cent. Almost one-half of them (157 cases or 44 per cent) gave a background of cardiorenal disease.

Of great interest is the presence of arterial hypertension in women in the menopausal age. Two hundred and thirty-eight females (82 per cent) had reached the age of forty-five years or more, and hence were considered as within the menopausal age. A record of the menopause was noted in 70 per cent of this group. In eleven patients it had been brought on by surgical means, and in fourteen the changes were taking place at the time of the first observation. The average period of time that had elapsed between the completion of the menopausal changes and the first observation proved to be 11.15 years; in one-third of the cases this period was 5 years; in the 28 cases of essential hypertension in the menopausal age it was 7.6 years. There is no doubt that many of the cases began to show an elevated blood pressure with the changes of the menopause, and that in five years after its completion there was little indication of a return to a normal blood pressure. The relative benignity of the essential hypertension was displayed by the fact that none of them revealed any evidence of cardiovascular accidents.

Whether or not infection from the tonsils and teeth has a definite bearing in the etiology is difficult to determine. Nevertheless, because of its probable importance, a notation has been made. The tonsils and teeth were examined in 90 per cent of the cases. In 30 per cent of the patients they appeared normal; in 40 per cent on a basis of 1.32 points out of a possible 4 points the teeth were found infected; in 61 per cent infected tonsils were discovered on a basis of 1.58 points out of a possible 4; and in one-fourth of the entire group both the teeth and tonsils were diseased.

Because of the alleged effects of chronic intoxication, a notation was made of those patients using tobacco and alcohol. Their use by the females was practically nil. Seventy-five males were on record as having used alcohol on a basis of 1.17 out of a possible 4 points, ninety of them indulged in the use of tobacco on a basis of 1.79 points out of a possible 4; and fifty-seven admitted the use of both of them.

Previous illnesses, such as diphtheria, scarlet fever, typhoid fever, rheumatic fever, pneumonia, influenza, pleurisy and the venereal infections, were recorded in 91 per cent of the cases. Two hundred and ninety-three (71 per cent) of them gave a history of experiencing one or more of these illnesses. The average number noted was 1.87 illnesses.

The date of the onset of arterial hypertension was judged from the duration of the symptoms noted in the history. It was recorded in 90 per cent of the cases. In 74 cases (18 per cent) no symptoms referable to a high blood pressure were complained of by the patient at the time of the examination. This group of cases included those patients having essential hypertension, as well as those cases with no referable symptoms, but having, however, a cardiac hypertrophy, an aortic dilatation or positive laboratory findings. In 199 cases (48 per cent) the onset of symptoms occurred within one year; it was over five years in 44 cases (11 per cent). Twenty years proved to be the longest interval recorded since the beginning of symptoms. The average time for the entire group of patients was 2.09 years.

The diagnosis of essential hypertension was made in fifty-five cases (12 per cent). This condition means that no symptoms referable to the arterial hypertension were complained of by the patient; there were no signs of cardiac hypertrophy or aortic dilatation; the urine and blood findings were negative; only the elevated blood pressure was present. Thirty-eight of these cases were females, and seventeen were males.

TABLE III

Essential Hypertension Cases—55 Patients

Data	*No. of Patients*	*Per cent*
Positive family history	21	39
Negative family history	25	46
Menopausal age	28	51
Infected tonsils	27	50
Infected teeth	18	33
Tobacco users	9	17
Alcohol users	7	13
Previous illnesses (1.8 per case)	38	69
Chronic cholecystitis	9	17
Diabetes mellitus	5	9

It should be emphasized that the figures in Table III approximate very closely those of the entire group, so that along certain lines those conclusions which may be drawn from the cases of essential hypertension may likewise apply to cases of hypertension with cardiorenal complications.

The cardiac, vascular and renal symptoms presented and the signs discovered in these cases of arterial hypertension cover almost the entire field of symptoms and signs connected with the pathology of the heart, the arteries and the kidneys. They are too numerous to attempt to list in this paper. Cardiac symptoms were complained of by the largest group of patients (217 or 45 per cent). Two hundred and seven (43 per cent) complained of vascular symptoms and 180 (39 per cent) of renal symptoms. By means of percussion or the roentgenogram cardiac hypertrophy was found in 257 patients (56 per cent), and by the same method aortic dilatation was present in 60 (13 per cent).

The renal signs were based on the presence of at least a plus one albumin and a plus one casts in the urine. In 48 cases (10 per cent) there was found only cardiac pathology, in 25 (5 per cent) only vascular pathology, and in 27 (6 per cent) renal pathology alone. The combination of the pathology of all three, that is the heart, the arteries and the kidneys, was present in the largest group of patients (88 or 19 per cent). The combinations of the pathology of the heart and the arteries and the heart and the kidneys were in evidence in the same number (52 or 11 per cent). The combination of the renal and the vascular pathology formed the smallest of all groups (15 or 3 per cent).

It is apparent that in this series of cases cardiopathy played the most important role as a complication of arterial hypertension, if one accepts the latter as a clinical entity; the arteries played the next most prominent part; and the kidneys the least. From the clinical viewpoint this part of the analysis rather tends to uphold the new conception of the extrarenal etiology of high blood pressure, and it gives little support to the old ideas of intrarenal etiology.

A statement of the blood pressure taken on the first observation is given in Table IV.

In this table it is seen that the largest number of patients presented a systolic pressure between 175 and 200 millimeters, a diastolic between 90 and 115 millimeters, and a pulse pressure between 75 and 100 millimeters. More than 75 per cent had

TABLE IV

BLOOD PRESSURE—461 PATIENTS

Type	*Millimeters of Mercury*	*No. of Patients*	*Per cent*
Systolic	150-175	104	23
	175-200	141	30
	200-225	126	27
	225-250	58	13
	250-275	21	5
	275 and above	11	2
Highest	305		
Diastolic	Less than 90	44	10
	90-115	239	52
	115-140	126	27
	140 and above	52	11
Highest	180		
Pulse	Less than 50	11	2
	50-75	107	23
	75-100	197	43
	100-125	114	25
	125 and above	32	7
Highest	200		

a systolic pressure higher than 175 millimeters, and almost 40 per cent had a diastolic pressure above 115 millimeters, representing true hypertension. It is generally accepted that the diastolic because of its stability is of greater value in the diagnosis than the systolic pressure. The average diastolic pressure, taken at the first observation of the 58 patients whose death we know to have later ensued, was 122 millimeters; twenty-one showed a diastolic pressure below 115 millimeters, and eight of them below 100 millimeters. The average period of time elapsing between the first observation and their death was eleven months. It may be safely predicted that the death of a patient presenting a diastolic pressure of 115 millimeters at the first observation usually occurs within five years.

The average recorded weight of 386 patients was 154 pounds; thirty-four of them weighed over 200 pounds and eight less than 100 pounds. The average height of the 287 patients who were measured was found to be 65.56 inches. Weight charts show that 150 pounds is the average for females between fifty-five and sixty years of age with the height of five feet and five inches, or four pounds less than the average for the largest group of patients in the entire series. So we can consider our average patient only slightly overweight, and not rotund and obese as the usual hypertensive patient is pictured.

The urine of 97 per cent of the patients was analyzed. Albumin was found in one-half of the cases, while casts were discovered in the urine of eighty-two only. Both albumin and casts were found in sixty-eight.

The Wassermann reaction on the blood was performed in 94 per cent of the cases. It was found positive in sixteen (3.67 per cent) or about the same percentage as would be found in a group made up of the same number of patients without hypertension.

Two hundred and fifteen blood urea determinations were made in 169 cases or 1.27 per case. Four-fifths of these were found to be within the normal range. In 164 cases there were 177 determinations of blood creatinin made or 1.07 per case. Ninety-three per cent of these determinations revealed that there was more than the normal amount of creatinin in the blood. The average for the blood creatinin taken at the first observation in twenty-eight patients, who later died, was 3.59 milligrams, or twice the normal amount. The average time of death in these cases was 12.4 months after the first observation (Table V).

As is true of the diastolic pressure, blood creatinin is stable and it is of definite prognostic value. We may safely say that the death of the patient presenting twice the normal amount of blood creatinin at the first observation may be counted upon within a period of five years, except in cases of acute nephritis. The combined two-hour phthalein test was performed 130 times in 113 cases or 1.15 times per case. It was found below the normal in about 40 per cent of the cases.

TABLE V

BLOOD CHEMISTRY—FUNCTIONAL TEST

Test	*Milligrams 100 c.c. Blood*	*No. of Determinations*	*Per cent*
Blood urea—215	1-20	82	38
(Normal 20-40)	20-40	84	39
	40-60	30	14
	60-80	13	6
	80 and above	6	3
Highest	106		
Blood creatinin	1- 2	12	7
—179	2- 3	64	36
(Normal 1-2)	3- 4	69	38
	4- 5	22	13
	5 and above	10	6
Highest	10.7		
	Per cent		
Combined phthalein 2 hours—130	1-20	14	10
	20-40	34	26
	40-60	57	45
	60-80	22	17
	80 and above	3	2
Highest	100		

The ocular fundi were examined in 125 cases (27 per cent) and 144 diagnoses were made or 1.15 diagnoses per case.

TABLE VI

EYE GROUNDS—125 PATIENTS

Diagnosis	*No. of Diagnoses*	*Per cent*
Normal	48	33
Retinitis	24	17
Wiry vessels	18	13
Tortuous vessels	15	10
Retinal hemorrhage	10	7
Other diagnoses	29	20

In the fifty-eight cases of known deaths ophthalmoscopic examination was made at the time of the first observation in twenty. Only one case presented normal fundi, while the fundi of the remaining nineteen cases showed pathologic changes listed in Table VI. An average period of but nine months elapsed between the first observation and the time of death in these cases, which is very close to the lapse of time found in the study of the diastolic pressure and the blood creatinin. The eye findings may be said to have similar prognostic significance.

Diagnoses in addition to that of arterial hypertension were made in 76 per cent of the cases and may be seen in Table VII.

TABLE VII

ADDITIONAL DIAGNOSES—352 PATIENTS

Diagnosis	*No. of Patients*	*Per cent*
Chronic nephritis	115	33
Chronic cholecystitis	43	13
Diabetes mellitus	39	12
Cerebral hemorrhage	22	6
Myocardial insufficiency	21	6
Angina pectoris	19	5
Chronic arthritis	18	5
Lues	17	4
Other diagnoses	58	16

The tabulation of the many cases of nephritis, cholecystitis, arthritis and lues lends more prominence to the role of chronic infections as an important factor in the etiology of hypertension. In a review of the more recent literature on hypertension one is struck by the mass of evidence which is accumulating in favor of the infectious etiology. The number of diabetic cases gives some prominence to the endocrinal factor, and the cases of cerebral hemorrhage, myocardial insufficiency and angina pectoris show the involved circulatory difficulties.

Sixty-two deaths (13 per cent) were on record, in which the immediate cause of death was stated except in all but four cases.

Other statistical studies place in the line of frequency as the immediate cause of death cardiac insufficiency, cerebral hemorrhage and uremia but in our series it is evident that uremia comes first.

Replies to our first follow-up letters have been received from forty-nine patients. An average interval of two and three-fourths years had passed between the first observation and the receipt of this letter.

TABLE VIII

DEATHS—62 PATIENTS

Immediate Causes	*No. of Patients*	*Per cent*
Uremia	23	36
Cardiac insufficiency	12	19
Cerebral hemorrhage	9	15
Angina pectoris	8	14
Uremia and cardiac insufficiency	3	5
Postoperative pneumonia	1	1.7
Acute volvulus	1	1.7
Carcinoma of sigmoid	1	1.7
Unknown	4	6

TABLE IX

FOLLOW-UP LETTERS—49 PATIENTS

		Per cent
General condition	Better	60
	Same	30
	Worse	10
Usual work	Yes	60
	Some	21
	No	19
Throbbing in the head or headache	No	52
	At times	20
	Yes	28
Dizziness	No	54
	At times	34
	Yes	12
Shortness of breath	No	59
	At times	28
	Yes	13
Hard or rapid beating heart	No	57
	At times	31
	Yes	12
Pain in the chest at rest or on exertion	No	80
	At times	10
	Yes	10
Urination at night	No	33
	Occasionally	51
	Yes	16
Weight	Increased (14.2 lb. per case)	30
	Same	35
	Decreased (10.8 lb. per case)	35
Eyes	Good	38
	Fair	33
	Not very good	29
	Black Spots	20
	Retinal hemorrhage	5
	Blurring vision	2

It is gratifying to learn that most of the patients are feeling better, and that they are performing their usual work. With one exception few complained of the more common symptoms of hypertension. The one exception was nycturia which was admitted by two-thirds of them.

SUMMARY

1. In a review of 461 cases of arterial hypertension, females were found to be affected about twice as often as males. The largest group of patients were between fifty and sixty years of age, married, houseworkers and of approximately normal weight. About one-half gave a positive family history of cardiorenal disease in their predecessors.

2. As possible causes of the hypertension, chronic infections played the most important part, the menopause a fairly prominent part, while the stress of modern living conditions was apparently of little significance.

3. The average time elapsing between the onset of symptoms and their discovery was 2.09 years.

4. Cardiac disease as a complication to the hypertension played the most prominent role, the arteries next and the kidneys the least.

5. The diastolic pressure, the blood creatinin and the eye-ground findings have a definite bearing upon the prognosis.

6. Contrary to the usual statistics, uremia occupied first place as the immediate cause of death.

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Interpretation of Roentgenograms in Tracheobronchial Gland Tuberculosis. John B. Hawes, 2d, and Eli Friedman, Boston (*Journal A. M. A.*, Feb. 23, 1929), in a study of the interpretation of roentgenograms in tracheobronchial gland tuberculosis assert there is need of standardization. Although there was much disagreement as to the interpretation of roentgenograms, still they give a certain amount of useful information. The authors feel that the following conclusions are justified: 1. No diagnosis of hilum tuberculosis should be made on roentgenographic evidence alone. 2. The presence of enlarged tracheobronchial glands, as shown by roentgenograms, in the absence of clinical symptoms, does not necessarily mean active hilum tuberculosis or indeed hilum tuberculosis of any kind. 3. Calcification of the nodes, or any calcification as shown by the roentgenogram, particularly when previous films did not show any calcification, is an indication that one is dealing with a healing or healed process. In such cases, in the absence of clinical signs and symptoms, institutional treatment is not needed. 4. Repeated roentgenographic examinations are of great value in studying the progress of each individual case. Absorption of the hilum shadow and increased calcification are indications that healing is progressing favorably.

ASCITES

A CASE WITH COMMENTS

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The patient was a laborer of 59. The previous history was unimportant except that he had been a moderate drinker many years previously but denied Barker's criterion of hard drinking, i.e., drinking before breakfast. He complained chiefly of distention of the abdomen, beginning five weeks before, which was accompanied by shortness of breath, swelling of the feet, diarrhea with passage of some blood and nosebleed.

Physical examination. The patient looked fairly healthy. There was little loss of weight and the color was not bad. Examination of the head and neck was negative except for some enlarged venules on the face. The pupils reacted well to light and there were no palpable lymph nodes. Dulness on percussion was found in the base of both lungs in the back, and diminution of breath sounds in the same region.

The heart was negative but the upper border of liver dulness was raised two inches. The abdomen was greatly distended, with marked dulness on percussion in the flanks, shifting on change of position. No mass was felt in the belly nor could the lower border of the liver be palpated, even after tapping. The legs were edematous below the knees.

Here we have a case, in which the presenting symptom was obviously ascites. Such cases are very interesting for differential diagnosis because they involve so many possibilities and logical analysis, good judgment and some luck attending their correct diagnosis.

On the basis of frequency of etiologic diseases in ascites Cabot has shown from the result of 2217 autopsies that cardiac weakness, neoplastic peritonitis, renal disease, cirrhosis of the liver, tuberculous peritonitis and adherent pericardium are the usual diseases leading to ascites, their frequency being in the order named, and they include 90 per cent of all the disorders producing ascites. There are many other rarer causes, as solid tumors of the ovary (cancer and fibroma), in which ascites occurs in half the cases; and in 8 per cent of benign cystic ovarian tumors. Ascites is present in 7 per cent of uterine fibromyomata, a large amount existing in 4.6 per cent, and in about 20 per cent of these cases with fibromyoma the fluid is bloody.

Other rarer causes include the following: Syphilis of the liver in its various forms, in which the Wassermann reaction is almost invariably present, in 90 per cent of cases according to Stokes. Thrombosis (portal, vena caval, mesenteric), pressure of enlarged lymph nodes (tuberculous, leukemic or in Hodgkin's disease) and tumors compressing the veins noted above may induce ascites. Also it rarely occurs in severe anemias (pernicious anemia, leukemia, Banti's and Hodgkin's disease), owing probably to peritonitis. Ascites is occasionally found in intestinal obstruction from beginning peritonitis. One would naturally suppose cancer of the liver a common cause, but it is not listed in Cabot's 2217 autopsies because, as in abscess and echinococcus cyst, the cause of ascites is pressure on the portal vein or neoplastic peritonitis, and cancer of the liver is probably included under the latter head. About half the cases of carcinoma of the liver are attended with ascites and jaundice.

Still more rarely is ascites seen in pancreatitis, status lymphaticus, acute yellow atrophy of the liver and eclampsia. Lymphatic obstruction of the thoracic duct (chylous ascites), semistarvation and multiple serositis are unusual causes; and finally obstruction of the vena cava above the hepatic veins may induce ascites, as by thrombosis, mediastinitis, mediastinal growth, and in chronic lung disease with contraction from fibrosis.

But to return to the usual six causes which are responsible for 90 per cent of all cases: heart weakness, renal disease, neoplastic peritonitis, cirrhosis of the liver, tuberculous peritonitis and adherent pericardium. The heart of this patient showed no abnormality on physical or x-ray examination, except that it, with the diaphragm, was pushed upward. It is true that the autopsy showed some patches of fibrosis in the myocardium but it is doubtful if this condition had any bearing on the ascites.

This is the most appropriate place to speak of pericardium adherent to the chest wall as a cause of ascites. The heart is usually enormous, the most common cause of cor bovinum in children. The apex does not shift its position with change of posture of the patient, and Broadbent's sign is often present. Long duration of sickness and of tapping is characteristic of ascites due to adherent pericardium. The patient does not live many months after tapping in cirrhosis but tapping may be done occasionally for years in adherent pericardium. I have in mind a patient in hospital for four years with ascites, and given the diagnosis of cirrhosis, in whom tapping was done many times annually. Autopsy showed adherent pericardium. We may exclude heart weakness as a cause of ascites in the present patient.

We now proceed to neoplastic peritonitis, the most common cause of ascites next to heart weakness. This patient is of cancer age but marked anemia and emaciation are both absent. This is not uncommon in cancer of the liver. We recently saw in consultation with Dr. Weichbrodt a girl of twenty-nine with an enormous nodular liver, without emaciation or anemia and without great pain. Biopsy proved the diagnosis of cancer correct. The hemoglobin in the present patient was 70 per cent, with 3,000,200 red cells, and 6,300 leukocytes. There was no evidence of glandular metastasis (sentinel left supraclavicular node), the digestion was good, and no tumor was found in the abdomen or in proctoscopic examination by Dr. Manzer. The blood in the stools originated from piles. We cannot exclude malignancy and this must stand as a cause of ascites in this case, which was made probable by a later development.

Renal disease is next in order of frequency as a cause of ascites. The urine was normal; the phthalein function test gave 68 per cent return of the dye in two hours. The blood urea was a little high, 38.2 mgms.; and the creatinine 2.2 mgms. in 100 c.c. On these findings we may eliminate renal disease in the diagnosis of the cause in this case of ascites.

Cirrhosis of the liver next comes up for consideration. The patient does not have typical symptoms of portal cirrhosis with nausea, vomiting, hematemesis, and enlargement of the epigastric, mammary and veins about the navel (caput medusae). However, there are dilated venules on the face and piles from which bleeding has occurred.

The specific gravity of the ascitic fluid was 1014. This is not conclusive evidence of anything. When low (1005 or so), the fluid is usually a transudate, as in ascites; when high (1018 or over) it is commonly an exudate, as in neoplastic, tuberculous or other form of peritonitis. The van den Bergh reaction was delayed, which is found in nonobstructive jaundice. The indirect reaction gave 3.5 mgm. in 100 c.c. The normal amount of bilirubin in the blood varies from 0.5 to 1.5 mgm. While the patient was not clinically jaundiced, the van den Bergh test showed that he actually had a slight jaundice or bilirubin retention in the blood, and that this jaundice was not of the obstructive type.

We did not use the Rosenthal test for retention of dye (bromsulphalein) in the blood. We have found that it may be negative in extensive and late cirrhosis and carcinoma of the liver, while a positive test would be suggestive of liver disease. We must, therefore, conclude that portal cirrhosis cannot be excluded in this patient for the result of the van den Bergh test shows diminished liver function and some bile retention in the blood.

There is a history of alcoholism some twenty years previously. The dilatation of the veins on the face, epistaxis, rectal bleeding and ascites without enlargement of the liver, all point to cirrhosis, so this too must be included in our diagnostic probabilities. We may speak here of luetic cirrhosis and other forms of syphilis of the liver causing ascites, as hepatitis and gumma. A negative blood Wassermann reaction practically rules out syphilis, if repeated with similar result. This has been found true by Stokes in a large series of cases at the Mayo Clinic, where the blood Wassermann test was positive in 90 per cent of syphilis of the liver. He finds ascites in 30 per cent of liver syphilis, and jaundice in 47 per cent at some time, but only present at time of examination in 16 per cent of patients. The liver was palpable in 10 per cent of cases, and liver and spleen in 15 per cent. We rule out syphilis of the liver in this case chiefly on account of the negative blood Wassermann reaction.

We have remaining among the more common causes of ascites tuberculous peritonitis. There was no evidence suggesting the presence of this disease. The advanced age, absence of fever and tuberculosis of the lungs, the lack of tenderness and pain and tuberculous masses in the belly and low specific gravity of the ascitic fluid all speak against tuberculous peritonitis.

Having in mind the occasional success with injection of novasural in ascites of portal cirrhosis, we gave 1 c.c. intravenously every three days with 1 dram of ammonium nitrate thrice daily, and a salt-free dry diet with magnesium sulphate daily. No beneficial effect following, Dr. Nelson, the interne, tapped the belly and removed a gallon of ascitic fluid.

Two days later the patient began to lose a great deal of blood in the ascitic fluid which had leaked constantly since the tapping. The question naturally arose, whence did the blood come? As the bleeding did not arise until two days after the tapping, and as the blood was evidently diluted with the ascitic fluid, the inference was that the bleeding came from within the abdomen and not from the wall. If this was the case, then an erosion of a blood vessel by a malignant process seemed the most natural cause of hemorrhage and this diagnosis was made by the writer. The patient was completely exsanguinated and was turned over to the surgeon for blood transfusion and abdominal exploration. Before this was done the patient died.

Our original diagnosis included cancer or portal cirrhosis of the liver on account of our inability to exclude either of these diseases in favor of the other. This diagnosis was substantiated even more completely than we had dared to expect by the pathologist, Dr. Epplen, who found the liver small and pushed up high under the diaphragm, to which it was attached by many adhesions. The liver contained a mass of yellowish gray material with pseudolobulations, and was covered with yellowish brown nodules. Many of these had broken down and had become necrotic. It was to this malignant degeneration of cirrhotic tissue that the free abdominal hemorrhage was due. Instead of the diagnosis of cancer *or* cirrhosis, Dr. Epplen found cancer *and* cirrhosis. There were some retroperitoneal glandular metastases and some patches of fibrous changes in the myocardium also discovered at autopsy.

The writer is wholly convinced that surgical exploration of the abdomen is indicated in all doubtful cases of ascites after a complete medical study and when the condition of the patient renders it possible. Such an exploration may be done under local anesthesia without any shock whatever and even without the knowledge of the patient.

Thus a woman of about sixty said she had had a gradually enlarging abdomen for several years. She was slightly anemic and somewhat thin but doing her own housework till within a few days of her death. No definite diagnosis could be made after careful study in hospital by all known tests, examinations and radiography. Tapping gave no further light by cytology or specific gravity of the fluid. Dr. Proctor examined the whole abdominal cavity through a small incision with a sterile electric torch, and found the entire parietal peritoneum studded with minute malignant growths, as proved by the pathologist. The patient never knew what was being done, thinking she was being tapped as before, only lying down. She ate a good supper after the operation and walked out of the hospital next day and continued doing her housework for several weeks.

Exclusion of heart disease is not always possible at first sight. The writer saw a fat middle-aged woman in consultation at Chehalis, with enormous ascites and edema of the legs, abdomen and chest wall. It was impossible to palpate the heart outline and the sounds were barely perceptible through the edematous chest wall. The physician in charge suspected malignancy in the abdomen. Dilated veins in the neck suggested cardiac disease. After Karell diet, enormous doses of digitalis and theocin, with magnesium sulphate, the edema and ascites disappeared. At a second visit the heart sounds were louder and a diastolic murmur at the base was heard and a Wassermann test taken at the first visit had returned four plus.

Cases of ascites always offer opportunity for most interesting study when palpably not due to heart or renal disease, and a positive diagnosis may usually be made by means of abdominal exploration when all else fails. This is even permissible in doubtful cases of suspected portal cirrhosis, which Cabot has shown is not diagnosed correctly in 61 per cent of cases, because the Talma-Morrison operation may offer some hope of recovery.

VARICOSE VEINS

THE INJECTION TREATMENT*

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In a recent issue of *Hygeia* the editor answers a query from a reader regarding a cure for varicose veins by saying the only safe and effective way to dispose of varicose veins is by surgical removal. The fact that such a statement could be printed in a magazine published by the American Medical Association makes me think there is need of a better understanding and truer appreciation of another method. This is the eradication of the enlarged veins by the injection of various solutions now commonly used in the practice of medicine, such as sodium iodide, sodium salicylate, glucose solution and metaphen.

This form of treatment is not entirely new, for as early as 1853 the French began using sclerosing injections in varicose veins. Many failures resulted from their use of such substances as phenol, iron salts, and alcohol; hence, in 1894 the Congress of Lyons decided to abandon this method in favor of varicotomy.

The present treatment of varicose veins may be regarded as an outgrowth of regular intravenous therapy that was made common by the introduction of salvarsan and the more recent use of a considerable number of drugs and solutions directly into the veins. All of us have probably watched our favorite disappear in patients to whom we were giving intravenous medication. We soon learn to select the straight, smooth veins and to avoid the tortuous ones with prominent valves, knowing that the latter are more susceptible to irritation and a resulting phlebitis. Taking advantage of this fact forms the basis of a simple and safe means of destroying undesired veins.

In considering the etiology of varicose veins there are two outstanding factors, the upright posture and heredity. But besides these we meet many contributing causes that have a distinct and unfavorable influence on these enlarged and sagging veins, that is, any ailment or disease which lowers the general tone of the body, such as syphilis, rheumatism, diabetes or tuberculosis.

The point I wish to make is that we have many systemic diseases that are contributing causes and, since we can destroy these veins with any one of a number of drugs in common use, our best results will come from giving our patients a careful examination and then using an agent that will improve their general health at the same time it eradicates the veins. For example, in syphilis use some form of mercury. Where rheumatism or focal infection is a factor, use sodium salicylate. If the patient has diabetes, nephritis or hypertension, use sodium iodide. For the emaciated use glucose solution. Should your patient have only a limited amount of time, or if you find a vein that does not respond to the solution indicated, use bichloride of mercury.

After careful examination we will still have left a large group of cases in which no specific medication is indicated. For these it is best always to use the same solution so that we may become more skillful in estimating the reaction necessary to secure an obliterative inflammation. For use in this group of cases I recommend quinine and urea hydrochloride solution, because it is efficient, painless, inexpensive and easy to prepare.

Before leaving this phase of the subject I want to mention two definite contraindications: first, mercury should not be used when kidney function is impaired; second, glucose should not be given in the presence of diabetes.

Considering the technic of administration, it seems to me that the difficulties have been overemphasized. The very nature of this disease works to our advantage because, where the varices are worst the circulation is poorest and the solution injected remains in contact with the intima longest, so that we automatically get the degree of irritation required to produce an obliteration of the veins.

My own technic is arranged with two possibilities alawys in mind, the complications of necrosis and embolism. Necrosis is avoided by making the injection into the desired vein and not into the tissues around it. It is not always easy to inject these thin-walled, freely movable veins, lying under comparatively thick skin; but we can always refrain from injecting the solution until we are sure our needle is in the lumen of the vein.

After a soft rubber tourniquet has been applied well above the vein to be treated, the patient is requested to stand for two or three minutes with his weight upon this leg. Then he lies down on a high table in a comfortable position and one which makes the vein readily accessible to the operator. The solution to be used is at hand in a syringe fitted with a new, sharp, 26 gauge needle; the chosen vein is made taut; and the needle is introduced parallel with the course of the vein, care being taken not to go through the opposite wall. The tourniquet is now removed and the leg elevated slightly to allow the veins to empty themselves before the injection is made. After the solution is injected and the needle withdrawn, a small pressure dressing is at once put over the puncture wound to prevent the back flow of the solution into the paravenous tissues.

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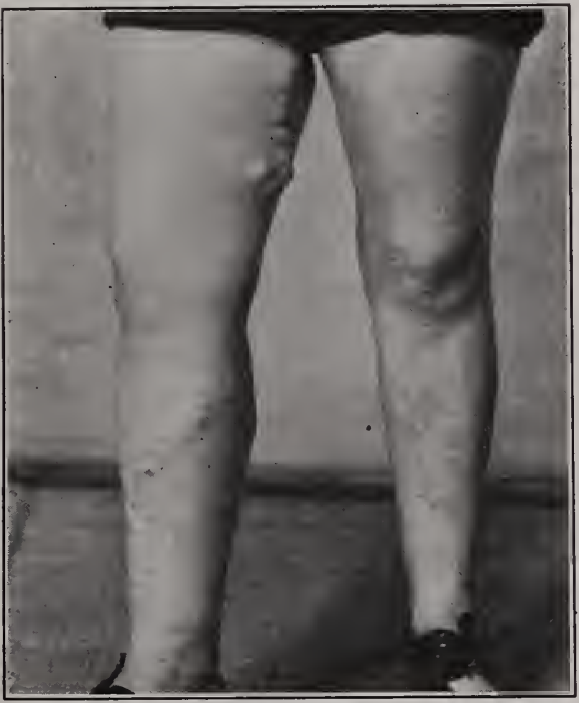
*Read before King County Medical Society, Seattle, Wash., Nov. 26, 1928.

An elastic Ace bandage is now evenly applied to the leg and both ends fastened to the skin with adhesive. This bandage keeps the blood out of the large veins and in this way prevents the formation of clots and all danger of embolism. The bandage is removed as soon as the inflamed walls of the vein adhere to each other.



Left leg operated on, right untreated. Note absence of veins, scar of healed ulcer, and decreased size of left leg.

Should you be unfortunate enough to make an injection outside of the vein, the danger of necrosis can be minimized by at once injecting sterile water into the same area. That this may be done quickly it is well to have at hand an ampoule of water, a sterile syringe and needle during each treatment.

REPORT OF A CASE

This patient, aged 54, was unable to do her own housework, had a systolic blood pressure of over 200, very large veins and an open, painful ulcer on the left leg.

The worst leg was treated, the other one being left for comparison. She received fourteen doses of sodium iodide. There was a marked improvement in general health as well as a clearing up of the ulcer and veins. The treated leg decreased in size from ankle to upper thigh on an average of three centimeters. At present the right leg is under treatment and progressing slowly because the patient is standing eight hours a day at her work in a laundry.

In closing it might be well to note a few of the advantages of this form of treatment. It is safe. McPheters' exhaustive study of the six deaths that have occurred in 53,000 recorded cases amply demonstrates the injection treatment's relative safety. There are few contraindications and these will probably disappear as we become more skillful in selecting our agents. The patient suffers little pain from injection, is not confined to bed, and misses no time from his regular work. It is thorough, even the small isolated varices being easily picked up and eradicated.

Mucous Colitis. Walter A. Bastedo, New York (*Journal A. M. A.*, Feb. 23, 1929), believes that in a large number of cases of mucous colitis a practical cure is possible, but usually only after persistent treatment for a long time. To treat those having the disorder as disagreeable neurasthenic patients and to neglect the bowel is a great mistake; but for cure it is necessary to continue treating the bowel for a long time after the nervousness and toxemia have subsided. Undoubtedly continued or recurrent severity of the symptoms is often the result of neglect on the part of either physician or patient. Many of the psychoneurotic patients with mucous colitis are misfits, or victims of circumstances or of an overweening and misdirected ambition; yet a great deal can be done to increase their usefulness to themselves and others. A knowledge of the family affairs and kindly discussion of them will sometimes prove of a great deal more value than anything that can be done as the result of the most elaborate laboratory tests. Bastedo describes his method of giving colon irrigations. He uses several gallons of plain warm water by the two-tube process; as the inlet tube a catheter number 24 French, and as the outlet tube a velvet eye rectal tube number 30 French are employed. The bag is hung low to give about 1½ feet of pressure and the water is run in very slowly, usually about an hour being allowed for an irrigation. For the first gallon the patient is placed on the left side and for the rest of the irrigation on the back. It is desirable for the bowels to move before the irrigation and if they have not done so already they are cleansed with an enema and then a short time is allowed for the defection reflexes to quiet down. He never gives irrigations to move the bowels but for the purpose of getting out something from higher up which is not brought out by defecation. As a rule, Bastedo does not approve of medicated fluids for irrigations, preferring plain water to solutions of saline, sodium bicarbonate, sulphonated bitumen (contained in the National Formulary) or other antiseptics. Nor does he approve of the introduction into the colon of foreign germs. He warns against the abuse of irrigations. They have become an extensively commercialized fad, and one frequently hears of daily irrigations. Irrigations require as much checking up as other forms of treatment, and physicians should now and then see and smell the irrigation returns instead of depending on a nurse's report, which is too often perfunctory. If irrigations do not suffice, one may at times produce an excellent effect on a resistant bowel by the slow rectal injection at bedtime of from one-half to 1 pint of warm olive, cottonseed or corn oil, to be retained all night.

SCHLATTER-OSGOOD DISEASE

REPORT OF TWO CASES *

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Schlatter-Osgood disease, which is generally considered to be more of an injury than a disease, was described by Osgood in 1903 and Schlatter in 1908. It was considered by Schlatter as an incomplete separation of the tibial tubercle.

The exact etiology is still in doubt, but most authors consider trauma, either direct as by a blow on the knee or indirect as by a strong contraction of the quadriceps femoris exerting a sudden pull on the tibial tubercle through the patellar tendon, as the most important factor. Other ideas advanced are that it is a low grade infectious process, an endocrine dyscrasia or a developmental anomaly in normal bone. Bergermann, Fromme and Hinrichs think it is associated with rickets, in that it develops in a number of cases of late rickets. It is allied to Kohler's disease of the tarsal scaphoid and Perthes' disease of the hip. Vigholt thinks the tendency is to regard it as a congenital dystrophy on an endocrine basis, the result of hypothyroidism, in which the trauma is incidental only. He mentions one case of Perthes' disease which was cured and one of Schlatter's disease improved by the use of thyreoidin.

The condition is one of adolescence and occurs most often in boys, due probably to their greater activity. The most common age is from ten to fifteen. Usually one knee is affected. The incidence, as reported by the New York Hospital for Joint Diseases over a three and a half year period, was 7 per cent of all knees examined. Hence it is not so rare as commonly supposed.

The signs and symptoms may be negligible and the disease overlooked, but usually there is pain, local swelling, impaired extension and limp. The pain is referred to the region of the tubercle and the patellar tendon. It is intermittent, usually increased by motion and relieved by rest. The local swelling is pretibial and periarticular and is caused by increase of bursal fluid, tearing of ligamentous fibers and direct tissue damage. Extension is limited and is usually apparent on going up and down stairs. There is usually a slight limp.

A study of the anatomy and development of the structures involved will materially aid in understanding this affection. We must consider, then, the tubercle of the tibia, the ligamentous attachments and the relation of the bursae to the disease.

The development of the tibia is from four centers of ossification, one for the shaft, one for the lower epiphysis and two for the upper epiphysis. These latter two are present at birth and unite to the tibia between the ages of twenty-one and twenty-five. The center for the lower end appears at birth and unites to the shaft at about seventeen.

The tubercle usually comes from the tongue-like protrusion at the lower end of the upper epiphysis but may have two centers, one extending down from the epiphysis and one growing up from the shaft. Hence it is evident that, while the center of ossification for the head appears first, it unites to the shaft last, and also there may be points of union in the tubercle which more easily permit its separation into fragments at some time during its development.

The ligamentous attachments are the tendon of the quadriceps femoris, which goes over into the patellar tendon and includes the patella. The direct fibres of the patellar tendon are attached to the tibial tubercle. There are also radiating fibres which spread in a fan shaped arrangement to attach to the shaft. This fact explains why there is not complete loss of extension when the tubercle is torn off.

The bursae to be considered are the prepatellar between the tendon of the quadriceps and the periosteum of the patella, the suprapatellar between the anterior surface of the femur and the posterior surface of the quadriceps, and those between the patellar ligament and anterior aspect of the head of the bone. The close relationship between the bursae and the joint permit of the extension of the process to the synovial membrane with resulting bursitis or synovitis.

The x-ray findings show a separation of the tibial tubercle. Usually the beak-like projection from the epiphysis appears eroded or worm eaten instead of having a smooth contour. The amount of separation depends on the development of the tubercle. On healing, the bone fragments are fused.

The differential diagnosis includes osteomyelitis, which can be ruled out by fever, leucocytosis and acuteness of symptoms. Sarcoma of the head of the tibia is fairly frequent but has never been reported to involve the tubercle. There is bone production in surrounding tissues, destruction of cancellous bone and progressive involvement, while in Schlat-

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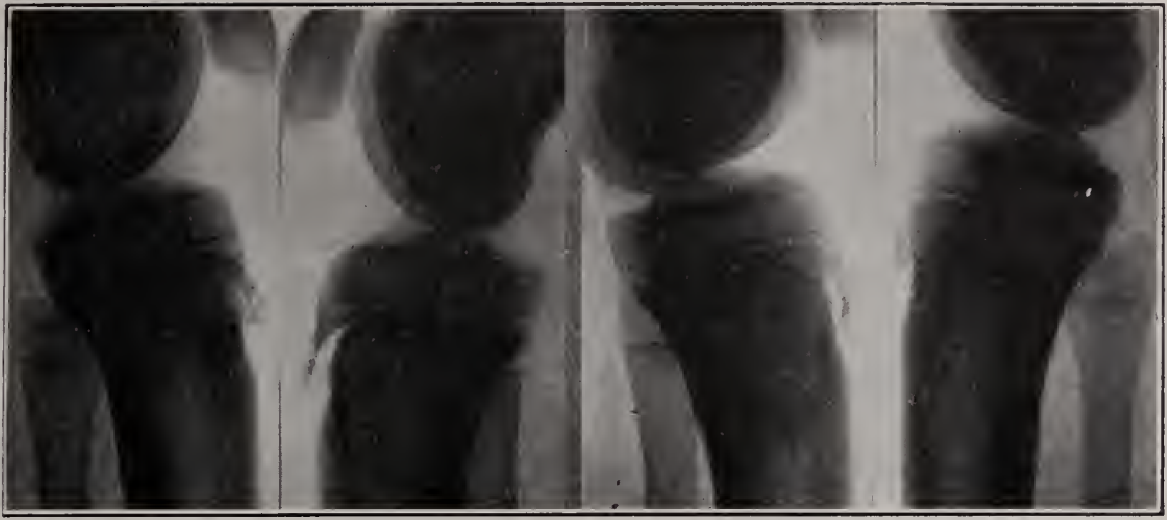
* Read before Pierce County Medical Society, Tacoma, Wash., Dec. 7, 1928.



Case 1. a, before treatment. b, after treatment.

ter's disease there is a progressive improvement. Bone cyst can be ruled out by radiogram. Tuberculosis runs a chronic course, is more painful, involves the joint and causes considerable atrophy which is part of the disease. Congenital lues is more common at the chondroperiosteal margin at the epiphyseal end of the shaft, and not the tubercle. Other luetic lesions are gouged or punched-out areas and occasional periosteal involvement. There is no atrophy, whereas there is some atrophy of disuse in Schlatter's disease. Pretibial bursitis may be difficult to distinguish, but may be differentiated if fluctuation is present or fluid aspirated.

The treatment consists usually in strapping with adhesive. In some cases this may not be sufficient and bed rest or plaster casts may be necessary for several weeks. Operative treatment is very rarely required.

Prognosis is good as to the end results, but there may be enlargement of the tubercle.

Case 1. This patient was a nine year old girl who was hurt on May 12, 1928, when she slipped on a loose rug and fell, striking both knees. Injury was at first considered trivial and she went to school, walking with a slight limp.

When seen a week later examination disclosed a tender swelling below both knees. There was some pain on motion and extension was limited. Radiogram showed a bilateral Schlatter's disease. She was kept in bed for six weeks at which time the radiogram showed improvement in the process. Plaster splints were then applied for another six weeks. The last radiograms taken showed fusion of the tubercle to the epiphysis. At the present time the patient has fully recovered, but a slight enlargement of the surface persists.

Case 2. This patient is a twelve year old boy who came under observation after this paper was written. His injury occurred a year ago and he has been untreated until now. Radiogram shows an old neglected Schlatter's disease of right tibia.

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MULTIPLE NEURITIS

A CASE FOLLOWING PERNICIOUS VOMITING OF PREGNANCY

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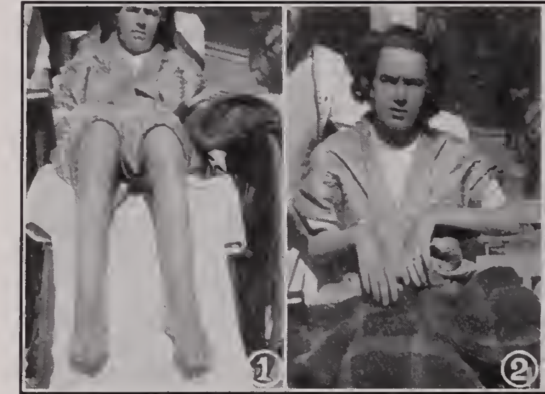
Although it is well known that polyneuritis occurs in cases of vitamin B. deficiency in countries where the main diet is polished rice and the disease is popularly known as beriberi, general practitioners seldom take more than an academic interest in it, and forget that it may develop even in our best hospitals. The present literature is full of suggestions from the nutrition investigators, particularly in view of the light that they have already thrown on a multiplicity of human disorders. Such wide publicity has even caused polite society to take a fancy to vitamins, making it a popular topic of parlor conversations.

CASE REPORT

Mrs. A. M., age 27, at the end of six weeks pregnancy November 25, 1927, began vomiting and could retain no food; soon she lost all appetite and had to be fed per rectum. As she was rapidly going down hill, intravenous glucose and normal salt were given. Under this conservative regime she became very cachectic and the attending obstetrician delayed emptying the uterus until she was moribund. On February 2, under gas anesthesia the uterus was emptied and the vomiting stopped immediately, but she had lost all appetite, could take no nourishment, and had lost her voice. For several weeks thereafter she had



Figs. 1 and 2. Bilateral foot and wrist drop, as extensors of wrist and flexors of ankles are chiefly involved. She is depressed and has a waxy complexion, characteristic of the disease.

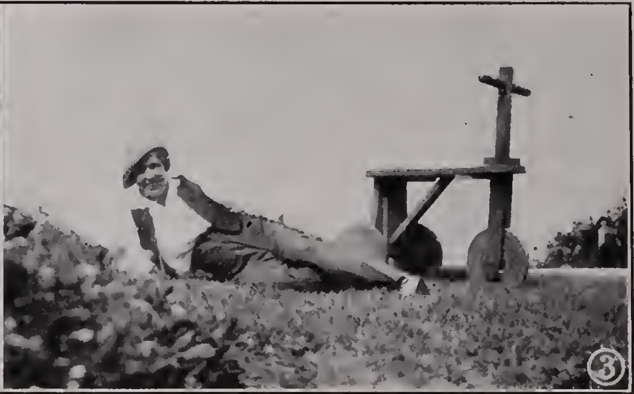


Fig. 3. After a month on vegetable diet and Bruder's yeast. Note change of facial expression. The kiddie car was found to be the only practical means of locomotion. Hands and feet are supported by splints.

to receive intravenous glucose and some nourishment per rectum.

During this period she was completely helpless, both extremities being paralyzed. At this time she was given liver and bone marrow mixed with milk, which nauseated her, consequently she resisted milk. In May she was still helpless, and at the request of the family, was brought home in an ambulance. I saw her May 27, a typical case of polyneuritis with waxy complexion, listlessness, depression and emaciation, bilateral dropped wrists and feet. The forearms and legs were very sensitive to pressure which caused stabbing pains. There was edema of the ankles and wrists, with a slight reddening. Tactile sensation was greatly impaired with marked atrophy of muscles.

Her condition was explained to her and she was urged to eat fresh vegetables and unadulterated non-medicated milk. The only medication given was brewer's yeast and Parke-Davis "metatone" (one teaspoonful t.i.d.), as it contains grains X of vitamine B in each ounce. This was supplemented by massage and splints.

Being an intelligent woman she cooperated nicely, and under such a simple regime the daily improvement was marvelous. The appetite returned and she began to gain weight rapidly. As soon as she regained a little strength the nurse was discharged and "wholesome neglect" was prescribed, to counteract her mental attitude of total dependence on others. She was soon able to crawl around, and finally a "kiddie car," adult size, was procured, with which she could exercise by peddling it around.

DISCUSSION

While the research laboratories are discovering new vitamins and the biochemist is finding new properties inherent in vitamins, we are losing sight of the prevalence of vitamin deficiency ailments, of more or less severity among our patients, especially in our obstetrical cases and diseases of infancy and other diseases causing nutritional disturbances. There will come a day when we will prescribe vitamin B, such as brewer's yeast, or some other form, just as freely as we prescribe cod liver oil and orange juice for infants.

Karr[1] concludes that there is a definite relationship between the desire to partake of food and the amount of the so called vitamin B in the diet. He has found that brewer's yeast, as compared with baker's yeast, tomato or milk, is much more potent in developing an appetite for food.

Hoobler[2] has made an extensive study of beriberi among infants in the Philippines and concludes that many symptoms of mild and incipient cases of this disorder have their counterpart in the children's wards of hospitals in this country. He further states vitamin B, in addition to stimulating the appeptite, also brings about a better assimilation and utilization of the food intake.

It seems that where there is a nutritional disturbance or a nutritional deficiency, there will also be a vitamin deficiency. Soon a vicious cycle will set in, as the vitamin B deficiency will cause further loss of appetite.

This paper is not intended to discuss the different types of multiple neuritis, nor their etiology or management. All the nutritional qualities of vitamin B are not enumerated. I will be glad if I only remind someone of the prevalence of avitaminotic diets of some of our patients and the symptom complex arising as a consequence.

Multiple neuritis[3] is conceded to be due to general toxemia or nutritional deficiency in the blood, causing degenerative changes of the nervous system. Therefore we cannot help thinking of vitamin B as a factor, since the recovery of appetite and weight was coincident with the administration of vitamin B.

Vedder[4] states that in the development of beriberi, if the diet is entirely lacking in vitamin B, it will take at least ninety days for the disease to develop, but if the diet is partially deficient in this substance, the typical disease will occur after a longer period.

There is a general acceptance that beriberi is strictly a tropical disease and occurs only among people that eat polished rice, forgetting the fact that several other articles of diet, widely consumed in this country, are just as free from vitamin B, and that clinical symptoms may arise, even by partial deficiency of this antineuritic substance.

CONCLUSION

1. Patients with a long standing nutritional disturbance, especially during pregnancy, should be supplied with this antineuritic vitamin.

2. It also should be considered in lactating mothers, and in the dietary of infants, just the same as cod liver oil and orange juice.

3. Distasteful medications ought not to be mixed with milk, as patients will dislike it and resent it later when given in pure form.

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Reaction of Thyroid Gland to Infections in Other Parts of the Body. Further work done by Warren H. Cole and Nathan A. Womack, St. Louis (*Journal A. M. A.*, Feb. 9, 1929), on the relation of infections and toxemias to the histologic picture of the thyroid gland confirms their observations concerning the production of hyperplasia, loss of colloid, desquamation and decrease in iodine content in certain septic processes and toxemias. Somewhat similar observations have been recorded by other workers. The authors have developed a toxin containing a group of four organisms which, when injected subcutaneously into dogs, will produce these changes in practically 100 per cent of the animals if iodine has not been ingested by them. The average iodine content of the thyroid of normal dogs is 0.304 mg. per kilogram of body weight, whereas the average iodine content of the tyroid glands of animals dying from severe infections is 0.142 mg. per kilogram of body weight. Similar changes have been observed in the thyroid glands of human beings who have succumbed to acute infections, but these changes are present to a lesser degree. Evidence points to a relation of infections to hyperplastic glands in human beings. Basal metabolic studies made by the authors on animals with hyperplastic glands produced by toxemias and infections have revealed a basal metabolic rate elevated out of proportion to the fever. Injection of toxic doses of histamine produces a marked rise in the metabolic rate, without a significant rise in temperature, and also creates a desquamation, loss of colloid, decrease in iodine content and beginning hyperplasia in the thyroid gland. Injection of toxic doses of an aminoacid (glycocoll) produces the same histologic changes. The pathologic changes already mentioned in the thyroid as produced by infections can be prevented to a great extent by the oral administration of iodine. The data assembled support the theory that the thyroid gland takes an active part in the resistance of the body against certain toxins and infections.

TREATMENT OF GONORRHEA

J. Guy Strohm, M.D.
PORTLAND, ORE.

In 1919 I brought back from France two bottles of acriflavine. One of the two bottles of powder was broken in my bed roll in transit, and sections of my old army blankets still retain the yellow stain.

As acriflavine had been extensively used in infected wounds in the army, we decided to give it a trial in treatment of gonorrheal urethritis. Our first patient was a stockman from eastern Oregon, who came in with a typical anterior specific urethritis, so we gave him a 1-2000 solution to use as a hand injection three times a day, without explicit instructions how long he should retain same. He went back to his hotel, evidently with a fixed and firm resolution that he would eradicate his trouble as soon as possible. He evidently held the 1-2000 solution in his urethra for long periods of time. At the end of three days he reported back that he was absolutely cured, except for a watery discharge. His slide at this time was negative for gonorrhea, but showed many large round cells; also subsequent slides were negative. About a week later a cone-tipped soft bougie was introduced into his urethra and went bump, bump, bump down to the cut-off muscle.

Our experience with acriflavine in the first case taught us two things: first, that while it may be an excellent gonococcidal while the organisms are still superficial and can be reached with a drug, second, it can cause strictures in a more insidious way than any drug we have used. We decided then and there to cut down the strength of the drug to 1-4000, and not to put it in the patient's hands, but rather to use it entirely in the office in the form of hot, low, anterior irrigations.

We report 1420 cases of acute anterior gonorrheal urethritis treated as follows: A routine microscopic examination and two glass test. A pint of 1-4000 solution of acriflavine, temperature 115°, with a water bath thermometer in the irrigator, which is placed at the level of a man's chin. The first day the man presents himself for this irrigation morning, noon and night; the second, third and fourth days morning and night, providing the acriflavine solution is not irritating him. The patient must be closely questioned regarding irrigation and pain at the time of irrigation.

About the fifth day and for the following four or five days he receives one irrigation of acriflavine in the morning, but the evening irrigation is made up of potassium permanganate solution 1-8000, at a temperature of 115° in the irrigator. We insist upon at least three soakings of the penis in hot water per day and again at bedtime; also that the patient drink fluids during the day and especially before going to bed, so that there will be at least one night urination to cleanse the canal of accumulated secretions during the night.

The effectiveness of this treatment is in proportion to the hour the patient appears after the discharge commences. This to our minds is the crux of the whole situation. It is not reasonable to presume that after the organisms have dug in, so to speak, that any drug can reach them. In the early cases, after the second, third or fourth day, the urine will often be found clear in both glasses and continue to be clear.

If this state exists, slides are given the patient and he is instructed to catch any morning discharge. After several days of clear urine in both glasses and negative slides, say the tenth day, a test of cure is made or an attempt to smoke out (as Dr. Peacock, Seattle, says) the gonococcus. I tell the patient that I am deliberately trying to provoke a discharge, and that at the end of an hour he will have a chemical discharge. This we do with a low, hot, 1-4000 irrigation of silver nitrate. The patient is again given slides and instructed to report back with any specimen he may obtain. If the slides are negative, one more silver nitrate irrigation is given the following day. If this slide is negative, a full sized sound is passed down to the cut-off muscle, the patient still having slides in his possession to use.

Of the 1420 cases we have found at the end of ten days, by the above method, that 32 per cent were negative and continued so for gonococci. On the other hand, if this beautiful picture we have painted changes its color about the third day, by both glasses of urine becoming cloudy, or as late as the tenth day, the treatment and outcome are an entirely different matter. The minute the second glass becomes cloudy we mark on the patient's card, "both glasses cloudy." In a rough clinical way this means to us that the patient has a posterior urethritis and probably a prostatitis.

When the second glass becomes cloudy it is a question of nicety of judgment just how to proceed. If we attempt to raise the irrigator high above the patient's head and try to do a postirrigation through and through, and the patient has a resistant cut-off muscle which does not relax, together with much straining, we are very often repaid for our efforts by an acute prostatitis and epididymitis, whether acriflavine or any other solution is used. On the other hand, at the first sign of the second glass becoming cloudy, we often avoid these complications in a certain class of patients who are able to relax with ease, or have had previous experience in bladder irrigations, by using the posterior irrigation, but we are careful that the anterior urethra is washed out thoroughly first and that the irrigation apparatus is low and the patient makes no strain in using the through and through irrigation.

The irrigation is now cut down to once a day, when either of the above solutions is used, in patients with two glasses cloudy in which we are fearful to use postirrigations for reasons mentioned above. We continue on with hot irrigations either of permanganate or acriflavine anteriorly only. For the treatment of the posterior urethra we rely on hot sitz baths, hot enemas and acriflavine, 1 grain, three times a day, per mouth, keeping the urine alkaline while taking the acriflavine.

When both glasses are cloudy we consider that probably the prostate is involved and again it is a nicety of judgment when to massage that organ. If done too early or sometimes too late, you will again be rewarded with an acute epididymitis for your efforts. We start off with a very gentle massage, say every three days, to empty the prostatic ducts which may have become occluded. If a case has extended for, say six weeks, with both glasses cloudy, it is a question of glandular involvement either in the urethra or prostate, and it is not a question of what drug to use, but rather of drainage, which is summoned up with the words, "sounds and massages," but not on the same day; ever fearing the combination of epididymitis from either one of these measures.

In acute epididymitis we immediately give support with an adhesive plaster supporter, as it is better than any to be found on the market. Lactigen in doses of 2 to 10 c.c. is given intramuscularly every other day for several days. In acute prostatitis nothing gives so much relief as hot water, using gallons of it just inside the rectum.

Medical-Dental Building.

PRENATAL PREVENTION OF POTENTIAL HEMORRHAGIC DISEASE OF NEW-BORN. A biochemical study made by I. Newton Kugelmass and John E. Tritsch, New York (*Journal A. M. A.*, Feb. 16, 1929), of the clotting components of the blood from the second month of pregnuancy to term in a woman who had given birth to five infants, three of whom, and possibly a fourth, had had true melena neonatorum, showed prothrombin deficiency analgous to that observed in true melena neonatorum. Nutritional therapy of the mother throughout pregnancy developed and maintained a normal maternal blood before birth. The fifth pregnancy terminated in the birth of a normal nonbleeding infant.

NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington and Idaho

Devoted to the Interests of the Medical Profession of the Pacific Northwest

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EDITORIAL

MEDICAL LEGISLATION AT OLYMPIA

At this writing only two weeks remain of the Washington legislative session. No bills pertaining to medical matters have been enacted into laws, although a large number have been introduced and at present are in various stages of progress.

The Antivaccination-inoculation-medication Bill, which was originally referred to the Educational Committee of the House, came on the calendar for its second reading. On motion of Dr. Durant it was rereferred to the Committee on Medicine and later to the House Rules Committee. It was considered this would probably be the end of the measure.

The antihospital Bill, which would open the hospitals of the state to patients of all varieties of cults, has been supported by a large and active cultist lobby. It passed from committee to the House and an attempt was made to rerefer it to the Committee on Medicine, which was defeated by cultist vote. At present it rests with the Rules Committee and its opponents are quite confident that it will die there and not come again to a vote before the House.

Two osteopath bills have received strong support from a vigorous lobby. One gives the osteopaths the right to advertise, the other would classify them as physicians. These bills were reported out of the Senate Committee on Medicine, with five members opposed and two favoring their passage. At this time they are with the Rules Committee and are likely to remain there, unless their supporters muster sufficient strength to present them again before the Senate.

The Senate bill, which would require a jury trial for all insanity cases by the prosecuting attorney, has not been reported from the Senate Judiciary Committee. It does not seem possible that such a bill could be favored by legislators to whom was explained the circumstances surrounding commitment of insane people.

A variety of other interesting bills have been presented. A House bill permitting alcohol to be prescribed by physicians and dentists was with the House Committee on Medicine, and was expected to come to a vote in the House. Sanipractor Lydon, of recent diploma-mill fame, has had a bill introduced exempting the sanipractors from the basic science act. Its defeat is inevitable, as it will die in committee. The x-ray technicians bill still rests with the Senate Committee on Medicine, as is also the fate of a bill regulating plumbing.

The Senate bill providing for a Children's Code Commission passed the Senate without opposition. It provides for a commission of nine citizens, of whom three shall be women, to investigate existing laws and conditions relative to dependent, defective, neglected and delinquent children. The commission shall present recommendations for the repeal of undesirable laws and for the promotion of child welfare. This is a beneficient measure which has met with no opposition.

A sterilization bill has passed the Senate, providing for the appointment by the governor of a state eugenicist and for the compulsory sterilization of socially inadequate potential parents, whether such persons are in the population at large or in the custody of state institutions. Its fate will be awaited with interest.

The White Cross Association has introduced a Senate bill providing for farms for drug addicts, but the $50,000 appropriation required for this purpose will probably kill the bill. Another Senate bill would permit two or more counties to establish combined tuberculosis sanatoria by the operation of joint districts. This has passed the Senate with little opposition and is likely to be enacted into law.

Some of these measures may become laws but none are assured at present. In next month's issue comments will be presented on legislative results.

IDAHO MEDICAL LEGISLATION

A number of measures have been brought before the present Idaho Legislature, bearing on matters of interest to the medical profession of that state. A bill has passed the Legislature and has been signed by the Governor, which modifies the existing law as to the length of time infectious and contagious diseases may be quarantined. This amendment gives the physician authority to discharge and release patients and occupants of a house exposed to any of the named diseases in a shorter time than specified by the existing law.

A bill has been introduced into the House by the Department of Law Enforcement which specifies the requirements which all applicants must pass before applying for license to practice the science or art of healing the sick or afflicted human beings. After July, 1929, all such applicants must be graduates from an accredited high school of standards equal to those of the Northwest Accrediting Association for High Schools. After July, 1934, any such applicant must have had two years in a college teaching letters and sciences. This requirement will apply to representatives of all the cults as well as physicians. If this bill is enacted into law, it will make a universal requirement for all applicants to practice the healing art higher than that of any state in the union. It will be watched with interest. Another House bill would require physicians to pay taxes on all their instruments and equipment, whereas in the present law they are exempt to the amount of $400.

A Senate bill has been introduced which has regularly appeared during the past six sessions of the Legislature, drawn by a former member of the supreme court. This would permit osteopaths to practice medicine and surgery the same as physicians and surgeons. It is stated that this will probably fail of passage, as it has done in the past. The final results of Idaho medical legislation will be discussed in our next issue.

AMERICAN COLLEGE OF SURGEONS AT VANCOUVER

The Northwest sectional meeting of American College of Surgeons was held in Vancouver, B. C., February 27-28. Surgical clinics were given by the physicians of Vancouver from 8 to 10:30 each morning. The meeting was divided into three parts: The hospital conference under the direction of Dr. Malcolm T. MacEachern, associate director of American College of Surgeons and director of hospital activities; the scientific meeting under the direction of Dr. Bowman C. Crowell, and the community health meeting under the direction of Dr. George E. Seldon of Vancouver.

At the hospital conference addresses were given by Drs. C. W. Sharples of Seattle, C. L. Scudder of Boston, B. C. Crowell of Chicago, and by M. T. MacEachern. A round table discussion followed, led by Mr. Robert Jolly, superintendent of the Baptist Hospital at Houston, Texas. This is the last time the primary subjects dealing with hospital standardization will be considered. Future sectional meetings will take up the advanced work in hospital standardization, probably being devoted largely to administrative problems for the hospital superintendents and the development of the various studies now in preparation on case records. All of the hospitals were distinctly notified that case records in the future would be used by the College in an effort to develop, through mass information, a definite status for the various diseases, and each participating hospital will receive the benefit of these intensive studies. The formation of committees on fractures, cancer, and other pressing problems will enlarge the work of the standardization movement.

The community health meeting was possibly the most successful public meeting ever held in British Columbia, addresses being delivered by His Honour R. Randolph Bruce, Lieutenant-Governor of British Columbia, Dr. Robert E. McKechnie, Chancellor of the University of British Columbia, Drs. Crowell and MacEachern of the College, Alfred W. Adson of Rochester, Minnesota, Reverend C. B. Moulinier of the Catholic Hospital Association, Dr. Burton J. Lee of New York and Mr. Robert Jolly. The auditorium was packed and the public demonstrated by continued applause their appreciation of the various addresses.

Clinics were held by the local physicians, one on cancer by Dr. Burton J. Lee, on fractures by Dr. Charles L. Scudder. At the afternoon scientific meeting, the following surgeons read papers: R. C. Coffey, C. L. Scudder, A. W. Adson, and B. J. Lee. One of the outstanding papers was that of Dr. Adson, presenting for the first time in the Northwest this work, entitled "Raynaud's Disease and Allied Vascular Disturbances by Thoracic or Lumbar Sympathetic Ganglionectomy." The essayist demonstrated clearly the enlarged field of neurosurgery covering these troublesome diseases which formerly were considered incurable.

The work on cancer which is being done in the Memorial Hospital, New York, was illustrated by lantern slides by Dr. Lee and the proposed measures of American College of Surgeons were outlined. Cancer committees were appointed for the study of cancer in Vancouver and the surrounding territory which completes the list of cancer committees covering the large centers throughout the Pacific Coast area.

This meeting of the College marks the beginning of an intensive development in its study of various diseases and surgical procedures through mass information to be gathered by various hospitals. For the past ten years the College has been attempting to educate physicians and surgeons in the standardized hospitals as to the importance and benefits to be derived from carefully prepared and preserved case records. The time has now come when it feels that most hospitals are preparing uniformly good records and from these comprehensive surveys can be made, looking toward the development of fundamental facts in various diseased conditions. Future meetings will be changed necessarily from the educational or developmental phase to that of the practical application of intensive study, directed toward definite medical and surgical problems.

Under the direction of Dr. B. C. Crowell the research department of the College of Surgeons will develop a series of national committees, with subsidiary committees in every large community, acting as feeders for the central committee. Material gathered from local hospitals will be analyzed in its relation to similar data from other hospitals and returned to the local hospital for future uses. One of the outstanding facts brought forward at this meeting was the demonstration that not over ten per cent of medical and surgical men go away for postgraduate work, and the effort of the College to bring to each hospital the benefits of postgraduate teaching will be accepted by the profession at large as a great forward step.

TOUR OF AMERICAN COLLEGE OF SURGEONS COMMITTEEMEN

A group of surgeons, representing the work of several committees of the American College of Surgeons, made a tour of Pacific Coast cities last month from Texas to British Columbia. At Portland and Seattle they appeared before large bodies of physicians, and spoke before a general meeting at Longview. The purpose of this visitation has been an effort to promote a higher class of surgery, and obtain data for the benefit of the practitioners of this art.

Dr. Charles L. Scudder of Boston, chairman of the fracture committee, delivered an address in which he emphasized the fact that standardization of the treatment of fractures is an impossibility. In the treatment of a given fracture there are a number of methods, each equally valuable, to be applied according to the preference of the surgeon and conditions existing at the site of fracture. His plea was for sound training and familiarity with basic principles in order to obtain as nearly perfect results and function as possible.

Dr. B. C. Crowell of Chicago, director of the department of clinical research, explained the aims of his department and its attempts to collect data on certain definite pathologic conditions. Particularly he described the efforts to assemble exact data on tumors of bones. It is aimed to collect available information on this subject from surgeons in different parts of the country. Nothing will be considered, however, that does not embody complete data derived from history, laboratory studies and accurate roentgenograms, in addition to operative procedures. In time it is expected to assemble information that will have important bearing on the knowledge and treatment of these conditions.

Dr. Burton J. Lee of New York presented a series of charts showing the accepted methods of treatment of cancer followed at Memorial Hospital of his city, determined from the experience of many years in this line of work. Cancer in each section of the body was specified, telling whether it should be treated by x-ray and radium radiation or by surgery, or the combination of the two and the order in which they should be employed. Reasons were given for the determination of the different procedures and something of the results which have followed them. Since all of these speakers are considered authorities in their lines of work by reason of many years of wide experience, their addresses were of special value and were appreciated by attentive audiences.

MEDICAL NOTES

THE PORTLAND A. M. A. MEETING

CONVENIENCE OF MEETING HALLS AND SPECIAL TRANSPORTATION FACILITIES REVEALED BY LOCAL COMMITTEE

The convenient location of the meeting halls in Portland, which will be utilized by the Association at the coming session, will enable visiting Fellows to visit the various attractions with a maximum of comfort and convenience. All the activities of the convention will be conducted in three buildings in the heart of the down-town district, within a radius of a half-mile.

The headquarters of the House of Delegates will be at the Hotel Multnomah, where 250 rooms have been reserved for the delegates and officers of the Association. Registration headquarters and the scientific and technical exhibits will be housed in the Municipal Auditorium. Most of the section meetings will be held in the recently completed Masonic Temple, which is one of the finest buildings of its kind in the country and admirably adapted for the sectional meetings.

Portland's medical center, consisting of the University of Oregon Medical School, Doernbecher Memorial Hospital, Multnomah County Hospital and the new Veterans Bureau Hospital, is only a few minutes drive from the various convention headquarters, so that visitors will be able to visit the various institutions with little effort. Negotiations are under way with one of the large taxicab companies to make available their fleet of cabs for the use of visiting Fellows. A uniform nominal charge will be in effect between any two points in the convention area. Tickets will be provided and will be on sale at all the leading hotels.

American Board for Ophthalmic Examinations. In 1914 committees from the American Ophthalmological Society, the Section on Ophthalmology of the American Medical Association, and the American Academy of Ophthalmology and Oto-Laryngology recommended that medical schools of the first class establish graduate courses in ophthalmology, leading to an appropriate degree. In 1915 a joint board was created, consisting of three representatives from each of these societies. In 1916 they were organized as the American Board for Ophthalmic Examinations. Its chief functions are to establish standards for practice of ophthalmology, and to conduct examinations to test the qualifications of those desiring to follow this form of practice. It does not confer degrees but gives certificates of qualifications.

The next examination by this board will be held in Portland, Ore., July 8. Those desirous of taking the examination can communicate with Dr. William H. Wilder, 122 So. Michigan Blvd., Chicago.

American College of Physicians will hold its thirteenth annual Clinical Session in Boston, April 8-12. The program provides hospital visits, clinics, demonstrations and ward-walks during the forenoons at fifteen Boston hospitals, and for general scientific sessions each afternoon and evening in the Assembly Room in Hotel Statler. A symposium on deficiencies is scheduled for the first evening. Deficiencies have become factors in producing acute and chronic diseases perhaps on a par with infections. A review of the present status of vaccine and serum prophylaxis and therapy will give a survey of this field. Many prominent interns will attend this gathering.

OREGON

Gift to Clinic Announced. Following receipt of a telegram from Mr. W. W. Brierly, secretary of the general education board of the Rockefeller Foundation, New York, Dr. Richard B. Dillehunt, dean of the University of Oregon Medical School, announced Feb. 10 that this Foundation had made a gift of $400,000 for the purpose of erecting an out-patient clinic building at the Portland institution. Construction is expected to begin in the near future on a site close to the medical school and associated hospitals on Marquam Hill. The gift is contingent upon an agreement by which the University of Oregon and local public health agencies will provide the funds necessary for the operation of the clinic.

The new institution will provide clinic material for the instruction of the students at the medical school and will replace the Portland Free Dispensary which was established in 1907, and which is now operated by the People's Institution in conjunction with the medical school at Fourth and Jefferson Streets.

Hospital Opened at Grants Pass. The new Josephine General Hospital at Grants Pass was formally opened by a public reception Jan. 29. It marks the culmination of years of effort on the part of citizens of Josephine County to provide that district with modern hospital facilities. The hospital, which is two stories in height and of modern, fireproof construction, replaces the former wooden structure, which will now be used as a nurses' home. The new institution is designed to provide medical and surgical facilities for thirty-two patients. Funds for its erection were derived from county tax refunds and from subscriptions by the citizens and local organizations. Miss Jean Aitchison is superintendent.

New Infirmary Requested. Following recent charges by students of the University of Oregon at Eugene that the university infirmary is totally inadequate and out-of-date, parents of the students were successful in bringing about the appointment of a joint committee from the Oregon legislature to investigate the situation. The Oregon "Dads" association has pledged $50,000 toward the cost of erecting a new infirmary, provided that the state matches this with an equal amount. Although the university is said to have promised not to ask for further appropriations for buildings during 1929, it is possible that an exception will be made in this instance on account of the urgent need of adequate hospital facilities for the university students.

Hospital Nearing Completion. The new $200,000 Eastern Oregon State Tuberculosis Hospital, now under construction at The Dalles, is expected to be ready for occupancy in March. The size of the building has been increased over the original plans so that one hundred patients can be accommodated. Already there is a waiting list of patients which exceeds this number.

Tuberculosis Committee Appointed. The Oregon Tuberculosis Association recently announced the appointment of a committee of physicians who are to take part in the organization of an "early discovery" campaign which the association plans to carry out this year. Those appointed are Dr. Harold C. Bean, Portland, president of the state board of health; Dr. G. C. Bellinger, Salem, superintendent of the state tuberculosis hospital; Dr. W. B. Morse, Salem, vice-president of the state board of health; Dr. L. B. Bouvy, La Grande, president of the Oregon State Medical Society and Dr. Ralph C. Matson, Portland, co-medical director of the Portland Open Air Sanatorium.

Physician Attacked. Dr. George Parrish, city health officer of Los Angeles, Calif., and former health officer of Portland, was attacked in his office Feb. 6 by J. H. Wolfe, a bacteriologist, who was said to have objected to the municipal ordinance requiring physical examination of food handlers. The assailant, who inflicted wounds on Dr. Parrish's person, escaped to the street but later was caught and placed under arrest.

Professional Tenants Organize. Physicians and dentists who occupy offices in the Weatherly Building, Portland, met Feb. 7 and formed an organization. Dr. J. C. Ghormley was elected president and Dr. J. W. Brand, secretary.

Labrador Physician Lectures. Dr. Wilfred T. Grenfell, the noted medical missionary of Labrador, delivered a popular lecture at the Little Theatre in Portland, Feb. 26.

Portland City and County Medical Society entertained nationally famous representatives of the American College of Surgeons at a meeting in the Medical-Dental Building Feb. 23. Dr. Charles L. Scudder, Boston, Mass., assistant professor of surgery at Harvard University Medical School, and Dr. Bowman C. Crowell, Chicago pathologist, were among the guests who addressed the society.

Central Oregon Medical Society held the annual election of officers at a meeting in Bend Jan. 29. Dr. Paul Woerner of Bend was chosen president. Dr. R. W. Hemingway and Dr. J. W. Thom, both of Bend, were selected as vice-president and secretary-treasurer respectively.

Jackson County Medical Society met Feb. 6 at the Lithia Springs Hotel at Ashland. The principal address of the evening was delivered by Dr. F. G. Swedenburg of Ashland. It dealt with the history of man's attitude toward and interpretation of the phenomenon of death.

Salem "Fakir" Fined. M. F. Lewis, who has been engaged in illegal practice at Salem for several years, under the name of the M. F. Lewis Medicine Company, was fined $100 in a local court Feb. 14 for practicing medicine without a license. He is said to have exploited his firm by means of a privately owned radio broadcasting station.

Dr. J. O. Van Winkle of Jefferson is recovering from an illness, which necessitated several weeks stay at the Salem General Hospital.

Dr. Frank Mount has returned to Oregon City after a trip to Honolulu, where he convalesced from a recent attack of influenza and pneumonia.

Dr. B. L. Sears, formerly of Portland, has located for practice at Eagle Point.

WASHINGTON

Licensed to Practice. Eleven candidates were granted licenses to practice medicine and surgery in Washington, following a meeting of the board of medical examiners at Seattle, Jan. 14-15. Licensed by examination, D. G. Leavitt, Portland. Those licensed by reciprocity were J. J. Bowlen, Calgary, Alberta; H. J. Capell, Pasco; Melbourne Clements, E. W. Converse and W. K. Ruble, Seattle; S. M. Creswell and C. E. Kjos, Tacoma; L. L. Long, Chicago, Ill.; L. M. Mares, Wenatchee; D. A. Palmer, Spokane; P. S. Shigaya, Kent; J. F. Sigafoos, Yakima; M. B. Snyder, Chewelah.

Committees Appointed. Dr. F. H. Brush of Yakima, president of the Washington State Medical Association, has appointed members of the local committees which are to assist him in planning for the annual meeting of the association in Yakima, Sept. 3-5. Dr. A. J. Helton will head the program committee. His assistants are Drs. J. F. Scott, E. S. West, and R. L. Ross, all of Yakima, and Dr. William Taylor of Ellensburg. The chairman of the entertainment committee is Dr. C. R. Duncan, assisted by Drs. D. F. Bice, Kay England, William Taylor and A. J. Helton. The finance committee consists of Drs. C. J. Lynch, William McClure, F. J. Cross and E. S. West, chairman. Dr. J. P. Loudon will act as local chairman for the annual golf tournament.

District Tuberculosis Sanatorium Urged. Working in conjunction with civic leaders in Southwestern Washington, Dr. Howard L. Hull, of Elma, superintendent of Oakhurst Sanatorium, has launched a movement to create by state legislation a sanatorium district embracing Grays Harbor, Mason, Thurston, Lewis and Pacific Counties. Except for the first named, these counties do not have any community facilities for the care of tuberculous patients. It is the plan of the proponents to enlarge the present institution at Elma in order that the sanatorium needs of the entire district be met. Oakhurst Sanatorium was established in 1921 and is now filled to capacity. It is supported jointly by the state and Grays Harbor County.

Hospital Addition to be Built. An addition to Everett General Hospital to cost $10,000 will soon be started. It will consist of a three story addition on the south side, including a sun-parlor. The construction will begin as soon as finances can be arranged.

Health Survey Planned. Dr. E. T. Hanley, Seattle health commissioner, announced Feb. 2 that a health survey of Seattle may be instituted during the coming summer under the direction of the United States Public Health Service which is now conducting similar surveys in several large cities.

Smallpox on Wane. Only one remaining case of smallpox in Bellingham Feb. 6, was reported by City Health Officer I. W. Powell, who at the same time renewed the ban excluding unvaccinated children from the public schools. This order aroused the ire of local antivaccinationists, who are now endeavoring to gain the passage of state legislation which will prevent the carrying out of similar public health measures in future epidemics.

Veteran Superintendent Retires. Miss Evelyn Hall, for more than twenty-five years superintendent of the Seattle General Hospital at Seattle, has retired. She has been named superintendent emeritus of the hospital as well as of the nurses training school. Her successor is Mr. L. G. Reynolds, former superintendent of the Methodist Episcopal Hospital at Los Angeles, Calif.

Community Health Meeting. Longview Memorial Hospital at Longview sponsored a community health meeting in that city, Feb. 29. Among the speakers were Dr. M. T. MacEachern, Chicago, Ill., director of hospital activities of the American College of Surgeons; Rev. C. B. Moulinier, also of Chicago, executive director of the Catholic Hospital Association, and

Mr. Robert Jolly, superintendent of the Baptist Hospital at Houston, Texas.

Named Superintendent. Dr. J. M. O'Dell of Tacoma has been appointed superintendent of the Mountain View Sanatorium to fill the vacancy caused by the resignation of Dr. John F. Steele.

Visitor from Japan Entertained. Dr. R. B. Teusler, founder and director of St. Luke's International Hospital at Tokyo, Japan, was the guest of the members of the Seattle Japan Society and local physicians Feb. 15. The institution of which he is head was founded twenty-five years ago and now cares annually for 6,500 bed patients.

Branch Veterans' Bureau at Tacoma. Following the vacating of the Cushman Veterans' Hospital and transfer of its staff to Portland, Ore., a United States Veterans' Bureau field station has been established at Tacoma. Dr. H. J. Whitacre has been named medical officer in charge.

Annual Meeting Held. Shelton General Hospital held its annual meeting and election of officers Jan. 17. Dr. F. J. Gibson of Olympia was chosen president and Dr. H. L. Kennedy of Shelton, secretary.

Snohomish County Medical Society entertained Dr. W. B. Penny of Tacoma and Miss Helen Wilcox of Seattle, president and executive secretary of the Washington Public Health League at a meeting in Everett Feb. 5. Dr. E. C. Leach of Arlington discussed "Fractures of the Long Bones."

Aeronautic Examiner. Dr. Harry V. Wurdemann, of Seattle, Colonel Medical Reserve, who is a graduate flight surgeon for the Air Corps, United States Army, has been appointed by the United States Department of Commerce, Aeronautics Branch, to be physical examiner for commercial, industrial, pilots and applicants for aviation training for the State of Washington.

Dr. Melbourne Clements, recently on the genitouninary staff of Rush Medical College, has located for practice in Seattle.

Wedding. Dr. W. A. Ash of Seattle and Miss Cecile Lillian Parks of Omaha, Neb., were married at the home of the bride at Omaha, Feb. 9.

IDAHO

Basic Medical Education Bill Introduced. The committee on medicine, surgery and pharmacy of the lower house of the Idaho State legislature introduced a bill Jan. 24 which is designed to set the minimum premedical educational requirements for future applicants to practice any kind of healing art in the State of Idaho. The bill provides that no applicant would be licensed who entered a medical school on or after July 1, 1929, that did not require at least a high school education for admission. Those matriculating after July 1, 1934, would, in addition, be required to have had at least two years college premedical work.

OBITUARIES

Dr. William H. Byrd, pioneer physician of Salem, Ore., died at his home Feb. 4, following an illness of one year's duration, aged 75 years. He was born at Fairfield, Ore., in 1854, and received his early education in Fairfield and Salem. Later he entered the medical department of Willamette University, Salem, graduating in 1881. Immediately following graduation he located in Salem, and practiced continuously there until 1927, when he was forced by ill health to retire. He was a former county physician of Marion County.

Dr. Garrett Lee Hynson, Portland, Ore., died at his home Feb. 17, aged 44 years. He was born at Milford, Del., in 1883, and came to Oregon in his early youth, where he spent several years in newspaper work at Portland. Later he entered upon the study of medicine, graduating from Jefferson Medical College, Philadelphia, in 1911. He returned to Portland and practiced continuously there up to the time of his last illness, with the exception of the period of the world war when he served in France as a captain with base hospital No. 46. He occupied the position of instructor in surgery at the University of Oregon Medical School.

Dr. Albert Cary, De Lake, Ore., died at his home Jan. 15, following a brief illness, aged 57 years. He was born at Toledo, Ohio, in 1871, and graduated from the Cleveland-Pulte Medical College, Cleveland, in 1898. For several years he served as medical missionary in the Hawaiian Islands. He had practiced at De Lake since 1926. Previously he was located at Gaston.

Dr. Luther E. McDougal, Eugene, Ore., died at his home Feb. 1, following a lingering illness, aged 77 years. He was born in Virginia in 1851, and graduated from the College of Physicians and Surgeons, Keokuk, Iowa, in 1890. After practicing for several years in the states of Missouri, Colorado, California and Oregon, he moved to Eugene in 1914 and remained in active practice there until 1920.

Dr. Thomas Clay Hollister, Idaho Falls, Ida., died in that city Jan. 27, following an operation, aged 63 years. He was born at Red Bluff, Calif., in 1866 but spent his early years in 'Illinois. He graduated from the University of Illinois College of Medicine, Chicago, Ill., in 1896. Following several years of practice in midwestern states, he located at Idaho Falls in 1910. Since that time he served continuously as district physician for Oregon Short Line railroad.

Dr. Jonathan George Lobb, retired physician of Portland, Ore., died at his home Feb. 8, aged 65 years. He was born in Canada in 1863, and graduated from Rush Medical College, Chicago, Ill., in 1887. He practiced at Butte until 1912 when he retired and moved to Portland.

REPORTS OF SOCIETY MEETINGS

OREGON

PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., E. B. McDaniel; Secty., E. W. St. Pierre

Portland City and County Medical Society met at the Portland Woman's Club Building Feb. 6.

Dr. J. Earl Else spoke on "Complications of Cholecystitis" and Dr. C. H. Manlove discussed "Carcinoma of Gallbladder with Metastasis."

At the meeting Feb. 14, the society entertained Dr. Reuben Peterson, professor of obstetrics and gynecology at the University of Michigan, Ann Arbor, who talked on "The Determination of Obstetric and Gynecologic Risks."

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., B. T. King; Secty., H. L. Goss

King County Medical Society held a general meeting February 4, at the Assembly Room in the Medical-Dental Building, Seattle, with President Brien T. King presiding. About one hundred members were present. Minutes of the meeting of January 7 were read and approved. The following were elected to membership in the society: Drs. C. L. Dixon, T. M. Manley, R. Y. Thompson, H. C. Turner and A. S. Wilson.

Dr. Lester J. Palmer read a paper on "A Simple Method for Preparation of Intravenous Glucose Solutions." He discussed the general subject for this form of therapy, describing the technic of preparing the solution in all its details. He gave a report of one hundred seventy-five administrations at the Virginia Mason Hospital. His conclusions were that glucose solutions over fifteen hours old should not be used. Only double distilled water should be employed which has passed through the still the day of use. Only anhydrose dextrose of a high degree of purity should be employed. The preparation of solutions is a laboratory problem which should be done only by experienced technicians. The paper was discussed by Mr. Gibb, laboratory technician, and by Dr. Hofrichter.

Dr. E. T. Hanley read a paper on "Health Work in Seattle." This is limited to the prevention of disease, the hospitals and clinics, being operated primarily through necessity. Sanitation and control of communicable disease are considered the basic activities of the Department of Health. The different divisions of the work were enumerated and fundamental aspects of each discussed.

Dr. Armin Rembe read a paper on "Present Status of Immunization and Therapy in Communicable Diseases." A brief review was given of serum prophylaxis and treatment of contagious diseases in childhood from the standpoint of the general practitioner, and the department of health, special attention being paid to scarlet fever and whooping-cough. The paper was discussed by Drs. Norman Clein and Harry Olmsted.

Dr. L. W. Whitlow read a paper on "Venereal Disease Control in Seattle." He discussed state laws governing venereal disease control, and their application in the syphilitic clinic at Seattle city hospital.

The following resolution was presented and adopted:

> "Resolved, that King County Medical Society regards House Bill No. 80, relating to vaccination, inoculation and medication, and House Bill No. 93, relating to hospitals, now before Legislative House Committees, as a menace to public health, and that this Society condemns and opposes the passage of both bills.
>
> "It is further resolved, that a copy of these resolutions be sent to each Senator and Representative of King County now attending the Legislature, and that a copy hereof be furnished the editors of all King County newspapers."

The resolution was discussed by Drs. King, Hanley and H. J. Davidson.

Dr. Orr of Cle Elum was introduced to the Society, and also Dr. W. H. Walsh of Chicago, who offered remarks regarding his function as consultant in connection with the County Hospital building.

The Medical Section of the Society held its monthly meeting Feb. 11, with Dr. George Miller in the chair.

Dr. Philipp Schonwald read a paper, "The Diagnosis and Treatment of Bronchial Asthma." In determining the etiology a well taken history is most important. If started in youth it is most commonly due to food, while later in life it may be a bacterial sensitization. Occupation is an important factor, while heredity figures in 60 to 70 per cent. The seasonal feature is important as concerns pollens in spring and summer and bacteria in winter. The nature of accompanying cough and sputum is of importance. Contributory causes are sinus and focal infections. The author outlined his method of testing for sensitization. As for treatment, one must avoid or remove specific and contributory causes. Specific and nonspecific treatment were outlined. Symptomatic treatment is necessary to relieve the distress of an attack. Adrenalin is the most important remedy. Mention was made of inhalation of nitrates and the administration of calcium chloride and potassium iodide. The use of narcotics is objectionable. The paper was discussed by Dr. Robert Freeman.

Dr. Frederick Epplen presented a number of pathologic specimens with brief clinical histories representing a variety of diseased conditions.

PIERCE COUNTY MEDICAL SOCIETY

Pres., W. G. Cameron; Secty., W. B. Penney

The regular meeting of Pierce County Medical Society was held in the Washington Building, Tacoma, January 22, Dr. W. G. Cameron in the chair. Minutes of the previous meeting read and approved.

Dr. Yoder presented some cases of fracture. The first was fracture of both bones of the forearm, in which he received good results with a beef bone screw in the radius and a beef bone splint on the ulna. The second was a case of fracture of the spine.

Dr. Rich showed some interesting radiograms and gave a report of a case of natural reconstruction of an injured femur in an infant.

Dr. J. M. Bowles, of Seattle, gave an interesting report of an analysis of 461 cases of arterial hypertension. This was discussed by Drs. Davies, Janes and Whitacre.

The Public Health League was represented by the President of the League, Dr. W. B. Penney, and Miss Helen Wilcox, secretary. Dr. Penney made an appeal for increased membership and interest in the League, and Miss Wilcox gave a report of the legislative situation as it has developed up to date in Olympia. Dr. Whitacre commended Miss Wilcox for the excellent work she is doing as secretary of the League.

WALLA WALLA VALLEY SOCIETY

Pres., J. T. Rooks; Secty., C. J. Johanneson

The regular monthly meeting of the Walla Walla Valley Medical Society was held at Walla Walla, Feb. 14, with President J. T. Rooks in the chair. Members of the Walla Walla Nursing Association were also present.

Dr. L. D. Fricks, Seattle, of the U. S. Public Health Service, gave an address on "The Activities of the U. S. Public Health Service in Controlling Epidemic Diseases." The national service aims to cooperate with the state and county health departments in controlling epidemic and relieving contagious diseases. The United States laws do not provide for this service to assume jurisdiction in any epidemic except plague, cholera, yellow fever and malaria, unless assistance is requested by state or local health officers.

Dr. A. U. Simpson, epidemiologist of the Washington Department of Health, spoke on "Control of Communicable Diseases." The jurisdiction of the state office is broader than that of the national service, since any contagious or epidemic disease comes within its control. He emphasized the importance of vaccination against smallpox and immunization against diphtheria, scarlet fever and typhoid fever.

Dr. G. H. T. Sparling, county health officer, discussed the activities of the Walla Walla health department.

NORTH PACIFIC PEDIATRIC SOCIETY

Pres., E. D. Carder; Secty., G. A. Lamont

North Pacific Pediatric Society held its annual mid-winter meeting in Seattle Feb. 2. The morning session, which was held in the auditorium of the new school for nurses at Providence Hospital, was devoted to the reading of papers by members of the society and guest speakers. Those in attendance were luncheon guests of the Seattle Pediatric Society at the Camlin. In the afternoon a demonstration clinic was held at the Children's Orthopedic Hospital. The meeting culminated in a banquet at the College Club.

Members of the society determined to forego the usual midsummer scientific meeting on account of the convention of the American Medical Association in July. A short business session will be held instead during the time of the national meeting. Dr. E. D. Carder and Dr. G. A. Lamont, both of Vancouver, B. C., are president and secretary respectively of the North Pacific Pediatric Society.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

THROMBOANGIITIS OBLITERANS. Clinical, Physiologic and Pathologic Studies. By George E. Brown, M.D., and Edgar V. Allen, M. D., Division of Medicine, Mayo Clinic, Collaborating in Pathology with Howard R. Mohorner, M.D., Fellow in Surgery, The Mayo Foundation. 12 mo. of 219 pp. with 62 illustrations. Philadelphia and London. W. B. Saunders Company, 1928. Cloth, $3.00 net.

Thromboangiitis obliterans, while comparatively rare, has been receiving much attention in the past few years. The enormous clinical material at the Mayo Clinic and the advantages of group investigation by clinicians, surgeons, pathologists, physiologists, bacteriologists and physicists have made possible this very complete study presented herein. While the disease was first described by von Winiwarter in 1879, it was not till the early part of this century that the work of Buerger and Todyo clearly showed it to be a distinct entity.

This investigation is based on the observation of more than 300 cases. At present one case of Buerger's disease is found in every 400 males registering at the Mayo Clinic.

The more important facts in regard to the disease may be briefly summarized. It always occurs in males (with extremely rare exceptions), a large proportion of the patients are Hebrews (over 50 per cent in this series), tobacco seems to have a predisposing influence, the apparent cause is an unknown infection, the peripheral vessels of the legs are chiefly involved, and the age limits are between 25 and 55 years.

The pathology consists of a chronic inflammatory condition of the arteries and veins. In the early stage there is proliferation of the cells of the intima which leads to swelling, secondary clot formation in the artery, canalization of the clot and fibrosis of the adventitia. Finally, the artery, vein and nerve become completely bound together. In arteriosclerosis, on the other hand, there is fibrosis of the media with deposit of lime salts, while there is no cellular proliferation in the intima with large prominent nuclei but, on the contrary, the nuclei are small and shrunken and the whole process is degenerative and not inflammatory.

The symptoms only occur in males and more often in Jews. The earliest symptoms are fatigue and pain, or both. Intermittent fatigue after exercise in one or both legs in male adults is extremely suggestive. The pain may be in the arch of the foot, ankle, calf muscles or under the knee, and disappears on rest or even standing still (claudication). Later distinct cramps or claudication occurs in these parts after unusual exercise and the pain stops when the patient stops exercising. About 80 per cent of patients are treated mistakenly for months or years for fallen arches.

The absence of pulsation in the arteries of the foot is most important as a diagnostic sign. Pulsations are rarely present. Abnormal change in color of the foot is characteristic. Abnormal pallor occurs when the foot is raised in the perpendicular position, and abnormal rubor or cyanosis is seen when the foot is allowed to hang in a dependent posture. Superficial areas of thrombophlebitis are observed in over 40 per cent of cases. Trophic changes, as shown by the constant presence of corns and infections are common, due to slightest abrasions.

Severe constant pain, especially at night, in the digits, ankle or dorsum of the foot is frequent, the patient sitting with his leg hanging over the side of the bed, or cross-legged like a tailor and spending the night in smoking to relieve his distress. Unilateral pallor of the digits may simulate Raynaud's disease but is bilateral in the latter and usually occurs in females. All the digits are involved and the pain is not so severe. Furthermore, the absence of pulsation of the arteries of the foot, the color changes on posture, fatigue and cauldication on exercise, all serve to separate thromboangiitis obliterans from Reynaud's disease.

From arteriosclerosis Buerger's disease is distinguished by the age, under 55, the race, rubor of the toes, claudication, excessive pain, absence of fundus changes in the eye, and of lime salt deposits in the arteries, as seen by the radiogram. Gangrene of the toes or fingers is the final stage of the disease.

The treatment consists in changing the posture of the limb from the perpendicular to the dependent position, in submerging the limb in cold followed by hot water, and in applications of radiant heat. Also in the intravenous injections of typhoid vaccine to relieve pain and to cause vasodilation. The effect of the foreign protein is often remarkable in relieving pain and may obviate gangrene and amputation.

Intractable pain or gangrene extending above the toes is positive indication for amputation. The matter of choosing the site of amputation is discussed in detail and requires most careful consideration. Finally, the quite wonderful results of lumbar smypathetic ganglionectomy are described. While in a general way the natural course of the infection in thromboangiitis obliterans is to attack one leg and run its course in three to six years, and then attack the other and eventuate in gangrene, the modern treatment may abort the disease and prevent death of the part.

This treatise closes with a description of the various methods followed in studying the disease. The book is very interesting, practically valuable and stimulating to the general practitioner in showing him what can be accomplished chiefly by close clinical study with the brain, eyes and hands, which is open to us all. We commend it highly as a most worthy contribution to medical literature.

WINSLOW.

CLINICAL NEUROLOGY. By M. Neustaedter, M.D., Ph.D., Visiting Neurologist, Central Neurological Hospital, Welfare Island, etc. With 228 Illustrations, some in colors, 602 pp. F. A. Davis Co., Philadelphia, 1929.

This book is written primarily for the medical student and general practitioner. The author has departed from the usual practice of anatomic and pathologic classifications of neurologic diseases by presenting the material according to its actual occurrence in medical practice, that is, by a description of symptoms. The sections dealing with the various conditions of the nervous system begin by a brief yet lucid description of symptoms, then proceeding in each case with etiology, pathology, differential diagnosis, prognosis and treatment.

The chapter on neurologic examinations presents the "tremograph." This is new and unique. Clinically, however, we could hardly resort to its use in gaining knowledge concerning the various types of tremor. But the "tremograms" are interesting and instructive. The chapter on the cerebrospinal fluid is quite up to date with a brief presentation of the facts concerning ventriculography, aerography, cisternal puncture, lipiodol injections and the Queckensteht test.

The subject matter concerning the different systemic diseases has been handled much like that in other reliable books on neurology, with nothing particularly new. The pages dealing with epidemic encephalitis are instructive by being illustrated, something not yet seen in many of the recent volumes on the subject. The pictures are those of the unfortunate victims of this disease which developed into what is known as the postencephalitic Parkinson's syndrome which is now the commonest form seen by clinicians. Nothing new is offered in the way of specific remedies. It is the author's conviction that the etiologic factor of epidemic encephalitis is identical with that of poliomyelitis with perhaps a variation of the species. This opinion is shared by others who are qualified men in this field.

The volume is generously and well illustrated and throughout the type is clear and easily read. Those not already supplied with a text on clinical neurology will find this a valuable addition to their libraries, as the author has had a wide and sound clinical experience in his chosen field.

ROHWER.

DIABETIC SURGERY. By Leland S. McKittrick, M.D., F.A.C.S., Visiting Surgeon, Palmer Memorial Hospital, etc., and Howard F. Root, M.D., Assistant Physician, New England Deaconess Hospital. With a Foreward by Daniel F. Jones, M.D., and Elliott P. Joslin, M. D. Illustrated with 79 engravings and 2 colored plates. 269 pp. $4.25. Lea & Febiger, Philadelphia, 1928.

The advent of insulin has been beneficial to the surgeon as well as the physician. With the definite control to force the metabolism of glucose within our hands the problem of surgery in the diabetic individual assumes entirely different aspects. This is very apparent in the publication of these authors. The typical thoroughness of the Joslin group of workers is manifest throughout this book, and the background of the tremendous experience of this conscientious and careful worker in diabetes is evident. Coupled with this is the enthusiasm of the younger surgeon. The technic of the various operations is described and good detail is presented in the photographs. The surgeon who contemplates procedures upon the diabetic will find this treatise very helpful. Great emphasis is laid upon the cooperation of physician and surgeon in the management of this group of cases. Rules of medical management are expressed so as to guide the surgeon who does not have good medical assistance. It is a pleasure to read these pages and see the work of these authors. The references to the literature are excellent. HOFRICHTER.

DISEASES OF THE NERVOUS SYSTEM. A Text-book of Neurology and Psychiatry. By Smith Ely Jelliffe, M.D., Ph.D., Formerly Professor of Psychiatry, Fordham University, New York, etc., and William A. White, M.D., Superintendent of St. Elizabeth's Hospital, Washington, D. C., etc. Fifth Edition, Revised, Rewritten and Enlarged. Illustrated with 476 Engravings and 13 Plates. 1174 pp. $9.50. Lea & Febiger, Philadelphia, 1929.

This new edition of a justly popular book is thoroughly revised, especially in the chapters on the vegetative nervous system and endocrine disorders. The authors properly include mental diseases in a treatise on diseases of the nervous system, but it is to be regretted that for convenience in reading the work could not have been published in two volumes. This, however, is a fault of medical books in general.

The original illustrations, of which there are many, are excellent and in those selected much care and discrimination have been displayed. Especially helpful are the large, colored diagrams, showing the sensory pathways. A good discussion of the technic of psychoanalysis is included, but one feels that the subject of the neuroses is somewhat oversexed, hysteria as the result of the factors of accident, litigation and compensation being practically ignored.

The reviewer cannot agree with the statement on page 769 (referring to brain tumors) that "gummata are not infrequent," nor in his experience has it been true that in epidemic encephalitis the abdominal reflexes are "usually unchanged" (page 726). An excellent discussion of the treatment of neurosyphilis makes no reference to the value of spinal drainage, yet this procedure, as advocated by Gilpin and Early, has proved of definite value, especially in the treatment of tabes.

Dandy's intraventricular air injections are dismissed with the statement that they "are of some localizing service in some frontal tumors" and an adequate clinical picture of cerebrospinal arteriosclerosis seems to be lacking. These are but minor criticisms, however, the book certainly fulfilling the hope expressed in the preface that the work would meet the needs of student, practitioner and even the specialist. PRICE.

DIATHERMY, Its Production and Uses in Medicine and Surgery. By Elkin P. Cumberbatch, M.A., B.M. (Oxon), D.M.R.E. (Camb.), M.R.C.P. Medical Officer in Charge, Electrical Department, St. Bartholomew's Hospital, etc. Second Edition. 332 pp. $7.00. The C. V. Mosby Company, St. Louis, 1928.

The author of this volume is one of the best known physical therapists in Great Britain. He has been particularly active and authoritative in the use of diathermy. After a brief historical description of the subject, several chapters are devoted to description of high-frequency currents and the presentation of various forms of apparatus in which they are employed. While the English machines differ materially from those manufactured in this country, the principles involved are the same.

The technical part of the volume is divided between medical and surgical diathermy. In the description of its particular application, the author demonstrates a pleasing conservatism which gives one a feeling of assurance concerning the uses of diathermy. He describes various forms of pathology for the relief of which it is applicable, giving the technic to be used with each. Special attention is paid to the favorable results from the use of general diathermy for the relief of subnormal temperature and accompanying constitutional nervous conditions. There is a description of its use in genitourinary and gynecologic diseases which are worthy of consideration. The use of high-frequency currents in surgery discusses the details of these methods, while the treatment of malignant diseases in general is described. Malignancy in special regions are taken up individually. Attention is also paid to nonmalignant growths with a description of the methods employed for their relief. One interested in this line of work will find this a valuable contribution for his information.

SERUM DIAGNOSIS BY COMPLEMENT-FIXATION with Special Reference to Syphilis. The Principles, Technique and Clinical Applications. By John A. Kolmer, M.S., M.D., Dr. P.H., D.Sc., LL.D.; Professor of Bacteriology in the Graduate School of Medicine of the University of Pennsylvania, etc. Illustrated with 65 Engravings. 583 pp. $7.00. Lea & Febiger, Philadelphia, 1928.

This new book embraces a discussion of all fields in which complement-fixation has been aplied to diagnosis, whether of proven value as in the test for syphilis, or of disputed worth as in testing for streptococcus infection. It begins with a discussion of the most generally accepted ideas as to the principles underlying the various features of the complement-fixtion test. In regard to each of these the author expresses his own ideas as to the mechanisms involved, usually but not always following those generally accepted. In the cases in which he does differ, his reasons for so doing are clearly put and backed by stated facts. All of the distressing features which occasionally arise in the routine of running the complement-fixation tests are entered into and analyzed. Thus, the anticomplementary reaction and all of its possible causes are tabulated and discussed, and the things that can be done to lessen the possibility of such reactions are described. This one feature occupies an entire chapter.

All details of technic are described in order; first, the preparation of solutions; second, the choice of a hemolytic system; third, the cell suspension; fourth, the complement; fifth, the hemolysin; sixth, the antigen. All follow in order in separate chapters. Many practical points of every day value are combined with a scientific discussion of the theories applying. The author then enters into the field of complement-fixation in bacterial infection. Methods of preparing antigen from B. tuberculosis, gonococci, B. thyphosus, B. mallei, B. abortus, etc. are next described, indi-

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cating which method of the thirty-one listed is most suitable to the particular organism from which an antigen is to be prepared.

Discussing the variations and discrepancies between the Wassermann test run in different laboratories, the author leads to the introduction and use of the Kolmer standardized technic. He extends this from the Kolmer Wassermann into the field of bacterial, myotic, protoxoal and metozoal diseases; the identification of seminal stains, and meat and milk adulterations. The sensitivity, specificity and value of the complement-fixation reaction is then taken up, not only in relation to syphilis, but in the other fields enumerated above. In most of the bacterial diseases an average positive fixation of somewhat over fifty per cent is claimed. The work of Dr. Kolmer in this particular field is so well known and the introduction of his technic for the complement-fixation test in syphilis has proven of such great value that his introduction of similar methods into the field of other infections will be watched with great interest, since as yet insufficient data are at hand to estimate their value. CEFALU.

THE INFANT AND YOUNG CHILD, Its Care and Feeding from Birth until School Age. A Manual for Mothers. By John Lovett Morse, M.D., Edwin T. Wyman, M.D., and Lewis Webb Hill, M.D., of Harvard Medical school and Children's Hospital, Boston, Mass. 12 Mo. of 299 pp. Illustrated. Cloth, $2.00 net. Philadelphia and London, W. B. Saunders Company, 1929.

This text provides a comprehensive manual for the mother. It covers the details of hygiene nutrition in a manner that will be intelligible to the average mother. No dogmatic rules are laid down and there is leeway for individual opinions of the attending physician. It is a text that will be helpful in any home and one which the physician will do well to recommend. C. L. SMITH.

EMERGENCIES OF A GENERAL PRACTICE. By the Late Nathan Clark Morse, A.B., M.D., F.A.C.S., Revised and Rewritten by Amos Watson Colcord, M.D., Surgeon, Carnegie Steel Company, etc. Second Edition, 541 pp. $10.00. The C. V. Mosby Company, St. Louis, 1927.

The author has attempted a record of observations and practical experiences during an active forty years in emergency practice. His object has been to consider the common, everyday accidents and emergencies that confront the general practitioner. General practice of medicine touches at some point every specialty and in emergencies sometimes overlaps them. The general practitioner should be urged to work with the specialist and not for him. There are chapters on first aid and treatment of asphyxiation from drowning, smoke, gas, electric shock, etc. Surgical emergencies cover a wide range of injuries, acute abdominal and other conditions, with a few useful suggestions for each instead of a general consideration of surgical treatment. Medical emergencies cover most of the acute diseases encountered by the general practitioner. Obstetric emergencies and poisoning from drugs used in medicine and their substances are also discussed.

GOITER PREVENTION AND THYROID PROTECTION. By Israel Bram, M. D., Author of "Goiter; Non-Surgical Types and Treatment," etc. 300 pp. Illustrated, $3.50 net. F. A. Davis Company, Philadelphia, 1928.

The physiology of the thyroid gland and its effect on the system in health and disease are discussed. Part I considers the gland in health and disease, with discussions of various forms of simple sporadic and endemic goiter. Its prevention and methods of treatment are presented in several chapters. Part II contains chapters on exophthalmic goiter, its etiology, prevention and treatment. Attention is paid to the relation to the thyroid of eating, sleeping and thinking. The volume concludes with a brief description of the ductless glands.

EONISM AND OTHER SUPPLEMENTARY STUDIES. By Havelock Ellis, L.S.A. 547 pp. $5.00. F. A. Davis Company, Philadelphia, 1928.

This is the seventh and concluding volume in "Studies in the Psychology of Sex." It includes essays and fragments left over from the other six volumes, dealing with subjects which have not yet assumed sufficient importance or taken clear or definite shape. The subject of eonism is discussed, which has been termed transvestism. The subject of kleptolagnia is also presented which was formerly considered kleptomania. There are chapters on the menstrual curve of sexual impulse and on the systhesis of dreams. Anyone familiar with the books by this author will understand that much of interest will be found in this volume.

THE SURGICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month). Volume IX, No. 1. (Mayo Clinic Number, February 1929) 247 pp. with 141 illustrations. Per Clinic Year (February 1929 to December 1929) Paper, $12.00; Cloth, $16.00. Philadelphia and London.

This volume presents clinical material on a great number of surgical conditions of marked interest to the surgical profession. Passalacqua and Judd discuss the benefits of oxygen immediately after operations as a preventative of pulmonary complications, particularly with patients with previous lung lesions and after severe operative procedures. The report deals with thirty patients. Pneumonia developed in none of them. Oxygen was used in eighteen cases of postoperative pneumonia with strikingly favorable results. There was an immediate lowering of temperature, disappearance of cyanosis, decrease of dyspnea, with final favorable results. Balfour reports a patient with four recurrences of peptic ulcer following repeated gastrectomy. It shows that this operation is not necessarily a protection against recurrence. A year has elapsed since operation on this patient. Hunt and Hager review 271 cases of malignant renal neoplasms, divided among adenocarcinoma, sarcoma, malignant tumors in children and epithelioma of renal pelvis, of which sarcoma is the rarest type of lesion. Symptoms and operative details of each are discussed. Of the malignant tumors of the kidney, papillary epithelioma of the renal pelvis is the least malignant. Several writers report various aspects of renal surgery, while abdominal pathology has its usual prominent consideration in these discussions. This volume has much of interest for every surgeon.

NORTHWEST MEDICINE

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ORIGINAL CONTRIBUTIONS

SOME OBSERVATIONS ON PROSTATIC OBSTRUCTION*

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I have been a good deal impressed by observing the great divergency of methods of handling prostatic obstruction used today. It would seem worthwhile to discuss and compare the various ways employed by the different expert operators. In spite of the different methods used there is no question but what on the whole the situation is being satisfactorily handled.

In this country there has been an extraordinary advance in our knowledge of dealing with prostatic obstruction. It is startling to look back twenty-five years and see the changes that have taken place. When I was a house officer the mortality for prostatectomy was appallingly high, but we took it as a matter of course. We knew we were dealing with old men with impaired hearts and kidneys and we felt that any who survived were lucky. What a difference today, where the mortality among experts is around four per cent or even less.

It was not until this century that real progress began. Sporadic prostatectomies were done since Cavillard did the first one in 1630, but as a rule men with prostatic obstruction were condemned to a catheter life with resulting pyelonephritis and pyonephrosis. Of course, some men got along for several years in this way but the incident of renal infection was high. I remember that my grandfather drew his urine with a silver catheter for about three years with no attempt at asepsis. I am sure that today many years would have been added to his life.

During the stages of seeking for a satisfactory method of handling these cases various palliative means were tried. In 1876 Bottini brought out his electrocautery operation which worked brilliantly in some cases. This operation was later popularized by Freudenberg in 1897. The operation was a blind one and done on patients without adequate preparation and was attended by many failures and a considerable mortality. As late as 1902 Hugh Young wrote an excellent paper on this operation, advocating it for the poor operative risk. In this paper he is beginning to see the advantage of complete prostatectomy and recommends it for men in good condition between the ages of forty-five and sixty-five years. At that time he had done fifteen prostatectomies.

Castration was probably the most unsatisfactory palliative method that was tried. It rarely gave relief, was not without mortality and was attended with very disastrous mental changes.

In 1894 Zuckerhandle of Vienna perfected the best perineal operation up to that time. This lead was followed by Nicoll in England, Albarran and others in France and Parker Syms in this country. Each of these operators introduced some new idea. It was Young, however, who picked the best from all these operations and, introducing many brilliant ideas of his own, perfected the best perineal operation that we have ever had.

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* Read before the Thirty-ninth Annual Meeting of Washington State Medical Association, Seattle, Wash., Aug. 27-30, 1928.

McGill and Bellfield were the early advocates of the suprapubic operation. They attempted to remove only small bits of the prostate. Later on the suprapubic intravesical operation was popularized by Fuller in this country and Fryer in London. They enucleated the whole gland. At first counterpressure was obtained by having one fist in the perineum; later on this was improved by putting two fingers in the rectum and getting direct pressure on the prostate.

In the early days of prostatectomy the damage that had been caused to the kidneys and heart by back pressure of the residual urine was not recognized. Renal insufficiency following operation was recognized but not properly combatted. Even in my early days of surgery it was not uncommon to etherize an old man with an overdistended bladder, open the bladder and enucleate the prostate at one sitting. No preoperative and very little postoperative attention was paid to renal insufficiency. Needless to say the mortality in those days was very high.

Many of these cases were in comparatively good health before operation, aside from their urinary difficulties, and yet after operation they often did well for twenty-four hours and excreted a good amount of urine; then the amount of urine diminished and they became drowsy and some had hiccoughs. Marked abdominal distention was common. I have seen a patient of this type so distended that a laparotomy was performed thinking that he had developed intestinal obstruction. The tongue became dry and coated and there was mild delirium. In other words, these patients showed all the signs of renal insufficiency with which we are all so familiar today and know how to combat by anticipating it. Even today one occasionally sees a prostate done by an inexperienced operator who is allowed to drift into renal insufficiency without proper measures taken to combat it.

The reason for the low mortality for prostatectomy today is not that we are so much more expert in performing the operation but because so much attention is paid to preoperative and postoperative care. The main points are sufficient attention to preliminary drainage, function tests, care of the heart and forcing fluids to the limit from the very first.

Let us consider the various methods of preliminary drainage, some form of which must be used in all cases which have residual urine. There are four accepted ways of drainage. Introducing a catheter through a trocar by suprapubic puncture to my mind has little to recommend it, if one contemplates doing a suprapubic prostatectomy. I would much rather have a free incision and adequate drainage of the prevesical space.

When all things are taken into consideration, there is no question but what the safest and surest way to drain a bladder is to open it and sew in a large tube. Even after opening the bladder and introducing a tube, gradual decompression can be obtained if it is deemed advisable. I feel that this is less important in suprapubic than in catheter drainage. If one empties an overdistended bladder completely by catheter, it is apt to be followed by marked congestion of the bladder and some bleeding. The catheter is apt to become blocked by blood clot and insufficient drainage follows. This on top of a cystitis, that may come plus the danger of the kidneys becoming congested and shutting down, is likely to lead to disastrous results. With a tube in the bladder one is assured of free drainage and what slight bleeding that follows emptying the bladder is taken care of.

If one starts forcing fluids to the limit at once on all doubtful cases and anticipates the renal insufficiency that is so apt to follow, I think it is rarely that one needs gradual decompression with the open bladder. In this method of drainage the bladder and the whole urethra are at rest. The danger of ascending infection to the kidneys is reduced to the limit, which is not true in catheter drainage where the catheter is apt to become plugged, resulting in a return of the overdistended bladder. A good many cases do not tolerate a catheter or develop an infection that forces one to open the bladder. If cystostomy is the safer course for the very sick man, why is it not safer for all? I do not recommend it for all prostatic cases nor do I use it in all by any means, but the point I want to bring out is that it is the safest and surest method of drainage.

Most of the perineal cases that I operate on, and I do at least one-third this way, are drained by catheter. In nearly all of these the prostate shows some signs of infection which I think is due to the catheter. If a man is a very poor risk, I always do a preliminary cystostomy, even if I am going to do a perineal operation.

Drainage by catheter may be either by an indwelling catheter or by intermittent catheterization. Both methods have their drawbacks. An indwelling catheter always stirs up a urethritis. Intermittent catheterization is to be preferred but it is apt to be painful and a certain amount of infection is perfectly sure to be introduced. Our objection to putting a man on catheter life is the danger of infection. That danger is still there, even though the catheter be used for a short time. There is decidedly more danger of epididymitis in drainage by catheter.

Today the experts throughout the country are pretty well agreed in anticipating and handling renal insufficiency. As a rule, our main fight has to be made during the process of preliminary drainage. After a balance is once struck and maintained it is usually not much disturbed by prostatectomy. When we first began doing preliminary cystostomies I would see a man with a chronically distended bladder with uninfected urine, the most dangerous type, excrete eighty to a hundred ounces of urine in the first twenty-four hours. This would give us a false sense of security. Perhaps the next day he would pass half of that and then almost before we knew it we would have all the typical signs of a full fledged renal insufficiency. Today we all know that these are the dangerous cases and keep a jump ahead of them.

In my hands these doubtful cases get a liter of fluid either by hypodermoclysis or intravenously every eight hours, until they can prove that they can excrete at least one hundred ounces in twentfour hours. This is supplemented by heart drugs as indicated. Formerly the medical consultant was aghast at forcing of fluids and objected strongly, but today most of them are willing to have it forced to the point of edema. Of course, this must be watched for and on its appearance the fluids must be cut down and especial attention paid to the heart. Most cases of renal insufficiency met with in prostatic cases do not have edema.

When shall we do the prostatectomy? Here again the experts are pretty well agreed. I think most of us have long ago given up the idea of haste. There is much more danger in operating too soon than in waiting too long. When renal function tests were first brought out, many cases were operated on too soon merely because the function tests were satisfactory. I do not mean to belittle these for they are of the greatest value, but let us not depend so much on the laboratory that we lose our power of observation. As well as having satisfactory tests the man should be as near normal as we feel we can get him. He should be sleeping well, enjoying his food and excreting well. I am always afraid of the smoker who does not enjoy his pipe.

I remember an old man who came in with marked edema and an overdistended bladder. My assistant did a cystostomy and put him on digitalis. He gradually improved and his edema disappeared. He was up and around each day, but his function tests were far from satisfactory. At the end of three months the appearance time of the dye was one hour and ten minutes and the output for the next two hours was only ten per cent. He was sent home with a suprapubic tube in. At the end of three months he was back again, insisting on operation. His function tests remained the same. Against my better judgment I enucleated the prostate suprapubically under local anesthesia, and the man made an uneventful convalescence.

This man was a smoker and the first thing after breakfast he would grab his pipe. This was the most satisfactory test that he had.

I am afraid it will be a long time yet before we are all agreed on one type of operation for prostatic obstruction. If we all were as clever in the perineum as Hugh Young, I am sure that most of us would use this route. The perineal operation, however, is for the expert and should not be attempted by the general surgeon. There is not the slightest question but what it is the operation of choice for all operative cases of cancer of the prostate, adherent prostate and the small fibrous prostate. I use it entirely for these cases as well as for some of the ones that would enucleate easily.

There are many pitfalls to the perineal route, unless one is very familiar with the operation. There is danger of stripping off the fibres of the external sphincter and rendering the patient incontinent. The rectum is easily opened which is a most distressing complication, especially if it is not recognized and sutured at once. It not infrequently happens that a median lobe is left in by the inexperienced. There is no question but what there is less shock to this operation; there is dependent drainage and hemorrhage is easily controlled.

The suprapubic enucleation, on the other hand, although attended with slightly more shock, is comparatively fool-proof. It is the operation most generally employed by the general surgeon and is also preferred by many of the experts.

The method of doing the suprapubic operation varies considerably throughout the country. Some men prefer to drain by catheter and do a one stage operation. I admit that the prostate enucleates more easily in the one stage operation than it does after suprapubic drainage, but I feel there is more shock to the operation and there is more danger of sepsis. One beauty of the two stage operation is that during drainage the prevesical space becomes thoroughly walled off. This is of especial advantage to those of us who enucleate the prostate and remove it through the drainage fistula merely by dilating this and not laying the wound wide open. I am strongly in favor of the two stage operation for those cases suitable for suprapubic enucleation.

There are two distinct methods of attacking the suprapubic operation, both of which have their advocates both in this country and abroad. One way, which has the criticism of being more or less blind, is to put two fingers of the left hand in the rectum to elevate the prostate which is then enucleated by the forefinger of the right hand.

The great advantage of this operation is that, if there has been a preliminary cystostomy, the prostate can be removed through the fistula without reopening the wound. This is easy for those who use a large suprapubic tube for drainage as I do. Hemorrhage is just as easy to control as it is with the bladder wide open. I know there is less shock to this operation and less danger of sepsis than when the wound is reopened.

The method used by a good many surgeons is to put the patient into Trendelberg's position and reopen the wound, laying the bladder wide open so that the enucleation is done under the eye. These surgeons, as a rule, do not use the fingers in the rectum to elevate the prostate. This method makes a very pretty surgical operation, as the spectators can see and follow it step by step. Many operators pick up bleeding points after the enucleation and suture the capsule. Lower of Cleveland goes so far as to recommend closing the bladder tight after this operation. This may work in his skilled hands, but I am perfectly sure that, if this were done as a routine, it would be attended by a high mortality.

I have several objections to the open operation. One is that you have lost one advantage of the preliminary drainage and that is the complete walling off of the prevesical space. In the second place, there is great danger in reopening the wound of opening the peritoneum which has become adherent to the upper part of the wound. Third, it is a good deal more of an operation and is attended by more shock on a class of patients on whom we like to do as little as possible. I feel sure that surgeons doing the open operation are going to have a higher mortality than those using the other method.

It is interesting to note that, during the preliminary drainage and the drainage after prostatectomy, some irrigate the bladder a great deal. It is my experience that most experts after having established adequate drainage let the bladder alone. I think the less irrigating that is done the better.

The control of hemorrhage is handled in various ways and as a rule the results are satisfactory. For suprapubic prostatectomy many use the Hagner bag or some of its modifications. Some use merely gauze pack. For perineal prostatectomy the best control is the Davis modification of the Hagner bag. I think, however, that the bag is seldom needed. Those of us who use spinal anesthesia rarely have trouble with bleeding. I carried a Hagner bag for years, but never used it.

The less foreign material left in the bladder the better. After a suprapubic prostatectomy I pack gauze into the prostatic cavity against the fingers in the rectum and keep pressure on this for a few moments and then remove it. If bleeding still continues, I pack again. It is rarely that this does not control the hemorrhage. If it does not, I leave a gauze pack in the prostatic cavity, but I am sure this does not happen in my practice more than once a year. If I do leave a pack in, I also put in a large suprapubic tube.

A word about anesthesia would not be amiss. In the old days practically all cases were given a general anesthesia, usually ether. This had a depressing effect on the already damaged kidneys. This, coupled with the fact that the fluid intake was diminished for several hours, undoubtedly increased the mortality. Today I am happy to say most experts are using either spinal or some form of sacral anesthesia. For the last fifteen years I have been using spinal anesthesia with uniformly good results. Lately in connection with this I use a half a grain of ephedrine subcutaneously and I find that this greatly reduces the fall in blood pressure.

Those using caudal or sacral or both are very strong for it, but it has been my experience that in a good many cases the anesthesia is not complete, and a few whiffs of ether are given to supplement it. This is my main objection to this form of anesthesia. I do not want my prostatic cases to have any ether. With spinal it is extremely rare not to have complete anesthesia.

Occasionally one sees a very feeble old man with a low blood pressure, for whom it does not seem wise to use spinal anesthesia. Such cases I do under local anesthesia and find it very satisfactory. The tissues about the suprapubic fistula are infiltrated. With the left forefinger in the fistula locating the bladder outlet, the whole region of the prostate is infiltrated through a long needle. The prostatectomy can then be done with very little discomfort and very little bleeding.

"TRAUMATIC" ORCHITIS AND HYDROCELE

ANALYSIS OF ONE HUNDRED CASES*

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The fact that trauma and strain are recognized by most practitioners and no pathologists as etiologic factors in the cause of inflammation of the testicle prompted this study. The paper is based on a review of the literature and an analysis of one hundred case reports of so-called traumatic orchitis and hydrocele, including eighteen from the California Industrial Accident Commission, all that have been passed upon by their medical department. In the latter are incorporated opinions from most of the recognized urologists in California, and they show a marked lack of uniformity as to the influence of trauma and strain. This is in keeping with the literature, the foreign articles minimizing the possibility of a traumatic orchitis and hydrocele and the American ignoring or didactically accepting it.

Epididymitis, epididymo-orchitis, orchitis and hydrocele are due directly or indirectly to inflammation and never to trauma. In our fathers' time many diseases were thought to be due wholly or partially to trauma or miasmata, but both terms, along with typhomalaria, have been deleted from modern textbooks of medicine and pathology.

Trauma and strains have become universal etiologic factors for industrial lesions and are comparable to the chiropractor's dislocated vertebra and pinched nerve as the common cause of all diseases, ranging from backache to hydrocele or hypertrophy of the prostate. The chiropractor overlooks the fact that a pressure of 1315 pounds applied to a vertebra free of muscular supports will crush the body into a powder without causing a dislocation, so he has no difficulty in "making an adjustment," just as some industrial surgeons appear not to know that no pathologist has yet been able to find any evidence of a connection between trauma or strain and a hydrocele, tonsillitis or orchitis.

Just as the etiologic factors responsible for diseases began to be scientifically studied, political elements entered and the pendulum started to swing backward, with the result that a discredited, universal, etiologic factor—trauma—again came into its own with physiotherapy as its handmaid. Unfortunately, the scientific urologist, for obvious reasons, only occasionally sees industrial cases, although they often present fascinating problems, and when he does he is surprised to find that his opinions are usually brushed aside in favor of those of an orthodox member of the trauma cult. Our scientific ideas of etiology have in the main been discarded and replaced by the questionable hypothesis of "locus minoris resistentiae," with the result that there is a tendency to use only one rule, to wit, the man was well and working, he suffered a trivial injury, now he cannot work, therefore his strain or trauma was responsible for his arthritis, paresis, tuberculous epididymitis, hydrocele or what not.

Scientific medicine is so young that the majority of this audience have lived in the day when the doctor was primarily interested in the treatment of diseases and not in its etiology and pathology. Necessarily, some of our present day theories as to the causes of disease are still based on faith. We have all been medically raised directly or indirectly on the teachings of Adami's Pathology and Pepper's System of Medicine, but no longer believe that epidemic cerebrospinal meningitis is due to mental or bodily strain, drinking alcohol, exposure to extremes of heat or cold, homesickness or checking perspiration. Neither do we believe that tabes is due to the jolting of a railroad train, the undue repetition of the sexual act, particularly in an upright position, or the use of alcohol and tobacco. We know that acute spinal meningitis is not due to violent bodily effort, and that malaria is not caused by "swamp poison," caught in pans of milk exposed to night air. Jacobi, while accepting the theory that infantile paralysis was due to trauma, the mother walking too fast and dragging the child by one arm, thereby wrenching and pulling it violently, still could not understand why in the great majority of cases the lesion was situated in the lumbar cord. We know that tetanus is not the result of strain and as yet have not reaccepted traumatic cystitis as a recognized entity.

Yellow fever was attributed to fomites and atmospheric impurities, and the stygomyia fasciata continued with its work, while Southern city councils financed "shotgun quarantines." All of us remember the last big yellow fever epidemic in New Orleans, when the United States mail was fumigated, the envelopes first being perforated so as to let out the miasmata. Twenty-six years ago yellow fever was endemic in Rio de Janiero and ships from that port came in rock ballast to Brunswick, Georgia, for turpentine, et cetera. The United State Marine Hospital Service ordered Surgeon W. C. Hobdy to have the stones individually dipped into a tub of acidulated bichloride of mercury solution before being carried ashore, and then the sides of the hold of the ship had to be thoroughly washed with the same solution. Only a decade ago no appendectomy report was considered complete unless the survivor remembered when he ate the blackberry jam or grapes, and the surgeon recovered the seed from the organ; and every woman with a cancer in the breast painted a vivid picture of the time when she was pinched or kicked by a nursing infant.

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*Read before the Twenty-fifth Annual Meeting of Nevada State Medical Association, Bowers Mansion, Reno, Nev., Sept. 21, 1928.

Naturally, today we are inclined to be amused by the recital of such etiology and therapy, but we are not entitled to laugh. Although every medical student is taught that tabes and paresis are always the result of syphilis, last year the medical director of the New York Industrial Accident Commission decided that paresis is not necessarily caused by syphilis but may be the result of trauma. One of the universal, recognized, congenital anomalies is the undescended testicle and concomitant hernia, yet such has been found by the California Industrial Accident Commission to be due to strain and not maldevelopment.

If a healthy testicle could be injured by trauma, then orchitis should be common among college athletes. The records of the University of California and Stanford University do not include a single case of orchitis, and only three of hematoma (none of which required surgical interference). Dr. T. A. Storey, in thirty-two years of medical supervision of athletics in various universities, has never seen a case of traumatic orchitis. He further noted that epididymitis (of venereal origin) did occur among athletes, but only in the same proportion as in that of the entire student body. We all have acquaintances who have been struck in the testicle by a golfball or baseball; they probably were nauseated and suffered excruciating pain at the time of the blow but none of them developed a "swollen testicle," for they did not have a subacute seminal vesiculitis and vasitis.

Differentiation must be made between saprophytic and pathogenic organisms, and proof of the presence of a nidus of virulent infection in the prostate and seminal vesicles is very important. Recently Reith reported that bacteria could be isolated with considerable regularity from the blood and muscular tissues of living animals, but hastened to add that "it is not assumed that bacteria live and multiply in healthy tissues." This statement is in keeping with the recent findings of foreign investigators who expected to prove the theory that pathologic organisms could lie dormant for years in healthy tissue, and in the end they demonstrated that it was only an hypothesis. Industrial accident commissions still accept this absurd hypothesis as a fact both in cases of genital tuberculosis and osteomyelitis.

Almost any organism in the blood stream may enter the testicle and, if there is a lowered resistance of the gland or an overdose of the bacilli, a foothold may be gained and characteristic lesions produced. However, Helmholtz found that organisms which have invaded the general circulation are rapidly filtered out and destroyed, although they may remain viable for a short period.

Concerning tuberculous epididymitis in particular, two questions are of vital interest to medicolegal boards. Did the injury cause " a traumatic exacerbation of a preexisting lesion," or "the lowered resistance of the damaged site encourage migration of organisms to the point?" The continentals equitably handle such cases by attributing the major part of the disability to the preexisting disease and the remainder to the injury. If the testicle was already diseased so that without injury in a short time it would have to be removed, no compensation for the loss of the testicle should be given, but if it was without doubt entirely healthy before the injury and the other testicle is absent, a compensation for the loss of the testicle is in order (because of the loss of internal secretion). Compensatory awards should be calculated on the basis of length of time it would take to restore an injured *undiseased* organ to normal function..

Simmonds, Tylinski and others have experimentally proven the possibilities of localized foci of tuberculosis following severe trauma. The occurence of an exacerbation in an already present testicular or epididymal tuberculosis can be accepted, if the disease becomes worse immediately after an injury or in a few days, and is not already in its last stages. The direct spread of the disease from one testicle to the other through the vas remains unproven. However, it is characteristic of tuberculosis of the epididymis to extend to the opposite side within a year or two after the first involvement in more than half the cases.

Before a tuberculous epididymitis can be attributed to a contusion two conditions are necessary. The blood must be filled with tubercle bacilli from a traumatized focus, such as an advanced pulmonary lesion or a miliary tuberculosis, and at the same time the testicle or epididymis must be anatomically so damaged that the place of injury prepares a suitable culture medium for the settlement of the tubercle bacilli from the blood stream. The presence of tubercle bacilli in the canals of the tubules of otherwise healthy testicles in the tuberculous is no longer accepted. Trauma as a cause of tuberculous epididymitis, therefore, is theoretically possible but practically extremely rare.

The German industrial authorities ruled that before a case can be attributed to trauma it must fit with the following postulates:

a. The patient should be entirely free of tuberculosis before he was injured and have a negative family history.

b. The injury must have been of the kind to cause the lighting up of a latent local infection, or make mobile the tubercle bacilli from a distant focus.

c. Trauma must be proven by constitutional disturbance or signs of a local anatomic injury, such as ecchymosis, swelling, et cetera.

d. Tuberculosis must not appear sooner than three or four weeks and not later than two or three months.

Gonorrhea or tuberculosis of the epididymis are the two infections which most often produce symptomatic hydrocele. The former is of a very acute type, while the latter tends to a more chronic course. Chronic hydrocele is caused directly by infections of the pneumococcus, colon bacillus, typhoid bacillus, spirochaeta pallida, and indirectly by erysipelas, rheumatism and neoplastic growths. Injuries at birth have been held responsible for certain cases of congenital hydrocele. Repeated slight traumata undoubtedly result in a low-grade inflammation and infusion, as evidenced by the frequency of chronic hydrocele among circus riders and bicycle riders. Chronic inflammation, with or without bacteria present, favors the production of fluid; consequently, it is possible for fluid to accumulate as the result of trauma alone exactly as it does in a knee that has been injured. However, due to a previous injury, conditions are produced that favor the collection of fluid very rapidly under subsequent trauma, when the degree of injury may be much less than that required in the first instance.

"Orchitis by effort" is a symptom-complex due to recurrent slight infections, and is not an entity. MacCallum says, "Lifting a weight I can hardly believe an imaginable predisposing cause of orchitis. My feeling without absolute proof is that the strain or blow is an eagerly remembered coincidence." As to the influence of indirect strains, such as in the back, Rusk and Mills state they cannot conceive of any mechanism for the production of epididymitis, orchitis or varicocele, even with the greatest stretch of imagination.

Inflammation is the local reaction to injury, and it is not always the result of bacterial activity, although such is the common cause of acute conditions. Hence, anything which causes local injury to the tissues is a cause of inflammation, be it a mechanical trauma, physical insult by heat, cold, electricity, disturbances of altered metabolism and abnormal internal secretion, or bacterial or microbic invasion and growth. A contusion causes rupture of capillaries with an escape of blood into the parts. The fluid and parts of the corpuscles are drained away by the lymphatics, the mass of corpuscles being out of place degenerate, their hemoglobin dissolves out and undergoes a series of reactive processes characterized by the color changes of the "black eye." Eventually the leukocytes carry away the debris and the parts usually return to normal. In ordinary trauma there is (1) pain, which is increased by motion; (2) loss of function with swelling beneath deep fascia; and (3) discoloration, which will appear probably at once because of injury to superficial structures.

The course of acute hydrocele corresponds to that of its cause. It tends to recover as the primary disease improves and becomes chronic as the cause persists. It is possible for the exciting factor to entirely disappear, however, and leave behind it a persistent hydrocele.

Recent statistics have noted the occurrence of an unusually large number of hydroceles following the resecting of veins in varicoceles, or transplantation of the cord in herniotomies, due to the blocking of lymphatics. Ocular evidence of trauma such as ecchymosis should always be present at the time of complaint of injury that results in a hydrocele or "orchitis," and even then at best trauma is only the aggravation factor and not the cause of the hydrocele.

CASE REPORTS

An analysis of the seventy cases of "traumatic orchitis" and thirty cases of "traumatic hydrocele" in this series shows:

1. Incidence	Orchitis	Hydrocele
Right	31	12
Left	29	14
Bilateral	10	4
2 Alleged etiology		
Direct trauma	29	7
Trauma to groin	11	4
Strain (lifting, etc.)	30	17
Unknown		2
3. Final diagnosis		
Gonorrheal epididymitis (with urethritis	3	
Venereal epididymitis (history of gonorrhea)	10	9
Nonvenereal epididymitis (seminal vesiculitis, no elicited history of gonorrhea)	36	10
Tuberculous epididymitis	14	3
Hematocele	2	1
Torsion of spermatic cord	1	
Gumma	3	
Seminoma	1	
Orchitis	0	
Sarcoma		1
Chronic irritation.		
a. Horseback riding		2
b. Bicycle riding		1
Herniotomy		2
Congenital cryptorchism		1
Unknown (no genitourinary examination made)		3

SUMMARY

1. The late Dr. Abrams recognized three etiologic factors of all ailments, syphilis, tuberculosis and cancer, and proved their presence by testing a drop of blood. Industrial referees appear to be generally acquainted with only one, trauma, and accept the complainant's word.

2. Seminal vesiculitis and not contusions or strains is responsible for the epididymitis, commonly diagnosed "traumatic orchitis."

3. Hydrocele is due to an inflammatory blocking of the draining lymphatics secondary to disease of the scrotal contents.

4. There is no authority, or even inference of knowledge, that entitles one to attribute the cause of any disease to trauma, and *whenever trauma is offered as the cause of a disease the proponent should prove his claim, and this can not be done without substituting faith for science.*

5. The relation of trauma to tuberculous epididymitis, "orchitis" and new growths of the testicle is not clearly indicated, although it is common to obtain a history of a blow on the testicles in these diseases. However, since every male has suffered some slight injury or other to the scrotum, and the eagerness with which the laymen will associate trauma with disease is well known, there is always the danger of attributing diseases of the testicle to an injury which was present before the blow was received and to which the accident merely called attention.

6. Extensive tuberculosis of the testicle and epididymitis may exist without any symptoms, so that the first symptom noticed by the patient may be the development of a sinus. The fact that a patient was full able to work before his injury does not preclude the existence of an active genital tuberculosis at that time.

7. College athletes never have traumatic orchitis but occasionally suffer from infectious epididymitis.

8. As urologists we are not interested in the spread of socialistic medicine by state agencies, nor in arguments as to the justice or racial benefits of same, but we are vitally concerned in keeping honest the etiology of diseases as worked out by this and preceding generations.

9. Unfortunately the industrial accident rulings are made by laymen, and in a recent report of a commission great credit is claimed for the number of sick and injured individuals brought within the fold of this remedial legislative act by "ingenuous theory and broad interpretation." When did it become necessary for laymen to advance medical theories?

10. Recognized pathologic postulates and not politico-medico-legal rulings of industrial accident commissions should decide the cause of diseases.

11. Expediency and economic factors encourage a tendency of the industrial surgeon to ignore the fundamental underlying infection and to emphasize strains or bruises, and the long discredited hypothesis of "locus minoris resistentiae," whenever a workman complains of a sore back or swollen testicle, and even his gonorrheal urethritis is often attributed to a strain.

12. One hundred cases of so-called traumatic orchitis and traumatic hydrocele were analyzed. Only three of the "orchitis" cases could be attributer to trauma, two hematoceles and one torsion of the testicle, while of the hydrocele series one was due to an hematocele and three to chronic irritation, horseback and bicycle riding. The remainder were cases of gonorrheal, nonvenereal and tuberculous epididymitis, syphilis, cancer, congenital and surgical errors.

490 Post Street.

PIONEER CHEST CLINIC IN IDAHO

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During the summer of 1928 the Idaho Tuberculosis Association put on the first series of chest clinics to be held in the state. These were held at seven different centers in various sections of Idaho. The principal object was, of course, the discovery and diagnosis of tuberculosis. The impression has been widespread that there is practically no tuberculosis among the white population of the state, and there is no sanatorium, public or private, in Idaho where tuberculosis can be treated except the Veterans' Bureau Hospital in Boise. It was hoped that the results of a chest clinic would demonstrate the need of a state sanatorium and direct the attention of the medical profession at large to the value of early diagnosis in tuberculosis.

It was vital that this clinic, the first of its sort in the state, should be a successful one. In order to avoid the prejudice in some quarters to the word "tuberculosis" with its old connotation of "consumption" and inevitable death, the clinics were called chest clinics and examination was made for diseases of both heart and lungs. In the language of the street, this "took the curse off" and in every center more patients attended the clinics than could possibly be examined.

In order to be of the greatest usefulness, a clinic should reach the productive members of a community. Therefore, we limited the patients, as much as was feasible, to those between the ages of fourteen and forty years. This restriction was not at all rigid, but it did serve its purpose of preventing a flood of infants and very young children and cutting down the number of the degenerative diseases characteristic of middle and later life. In all communities served it was made clear that children of any age with a definite history of heart disease or in contact with open cases of tuberculosis were particularly invited to the clinic.

It oftens seems as though people running clinics are determined to make them succeed in spite of the medical men rather than in cooperation with them. This was avoided in Idaho by taking the clinic only into those sections of the state, where the medical societies gave us definite invitations. There was excellent support from the doctors in every locality. They referred patients to us, gave their time in helping with the conduct of the clinics, and made the x-ray films required without any compensation. Their cooperation was a potent factor in the work.

We were determined to keep the scientific standard of work up to the highest possible level. Funds and personnel were limited. Beside the physician who made the examinations there was a trained health worker who took histories, weighed and measured the patients. The actual examining was done on a definite schedule, allowing a half-hour for the physical examination in addition to the history taking and the x-ray work when necessary. This gave sufficient time for a fairly thorough study of each chest.

We were unable to carry laboratory equipment with us and, even if we had had the paraphernalia, could not have taken time to do numerous sputum examinations. Consequently we resorted to x-ray films for corroboration of diagnoses in cases of lung pathology. Not a single case of tuberculosis was diagnosed without radiographs of the part involved. These films have been left on file in the office or hospital laboratory where they were made. Readings of the films were put on the patients' records and written on the radiographs themselves, when the findings were characteristic.

Careful, written records of the history, physical examination, x-ray data, diagnosis and recommendations were made for every individual examined. A copy of these findings, diagnosis and recommendations was mailed to the family physician in each instance. In those cases where the patient had no physician, he himself was given a copy of the diagnosis and recommendations, and urged to consult a physician at once. The original records of all persons examined are on file in the Boise office of the Idaho Tuberculosis Association.

A total of 772 people were examined during the clinics. Of this number we found it necessary to radiograph 360 individuals. Two hundred and forty-four adults had films made of their chests, and 106 children under fourteen years of age. In ten cases other portions of the body were radiographed.

TABLE 1

Age grouping of all patients examined.

Up to 5 years	27
5-15 years	195
15-25 years	167
25-35 years	155
35-45 years	106
45-55 years	82
55-65 years	25
65-75 years	9
75-85 years	3
Total	769

Three patients were examined twice at intervals of several weeks.

The age distribution of all persons examined was an interesting feature of the clinic. Table 1 shows that we accomplished our purpose of reaching mainly the young adult groups of the population.

TUBERCULOSIS FOUND

Of the 772 persons examined, 91 adults had active pulmonary tuberculosis, 16 adults had quiescent or apparently arrested pulmonary tuberculosis, and 72 adults were tabulated as pulmonary tuberculosis suspects. Twenty-three children under fourteen years of age had definite chest tuberculosis and 28 more were suspected of juvenile chest tuberculosis.

No person was classified as a tuberculosis suspect without a definite departure from normal. These people had demonstrable abnormalities on physical examination or on the x-ray films or both; they had clinical symptoms of illness in varying degrees. In every case called a suspect it would require weeks or perhaps months of observation and careful study to rule out tuberculosis.

The classification of all tuberculous lesions found is shown in Table 2.

TABLE 2

Classification of tuberculous lesions.

Active pulmonary tuberculosis (adult)	91
Apparently arrested pulmonary tuberculosis (adult)	16
Suspected pulmonary tuberculosis (adult)	72
Healed Tuberculous focus in lung	12
Juvenile chest tuberculosis	23
Suspected juvenile chest tuberculosis	28
Healed juvenile chest tuberculosis	23
Abdominal tuberculosis	2
Aural tuberculosis	1
Bone tuberculosis, suspected	2
Glandular tuberculosis	2
Glandular tuberculosis, suspected	3
Glandular tuberculosis, healed	2
Intestinal tuberculosis	2
Intestinal tuberculosis, suspected	2
Knee tuberculosis	2
Laryngeal tuberculosis	7
Laryngeal tuberculosis, suspected	2
Miliary tuberculosis	1
Pleural effusion, tuberculous	2
Pleuritis, acute tuberculous	2
Peritonitis, tuberculous	1
Spinal tuberculosis	1
Spinal tuberculosis, suspected	1
Tuberculosis of testicle	1
Total tuberculous lesions	301
Total tuberculous patients	261

Upon further study, another interesting and perhaps significant fact appears. Of the 91 cases of active adult pulmonary tuberculosis, only 19 could be regarded as far advanced. On the other hand, 20 cases were classed as moderately advanced and 46 as minimal. Six other cases were impossible to classify definitely on only one examination; all these 6 would have fallen into either the moderately advanced or minimal groups.

Whether the small percentage of far advanced cases was an accidental occurrence or the result of some retarding influence, such as climatic conditions or the abscence of crowded urban population, remains to be determined. Certainly this point merits further consideration.

TABLE 3

Classification of active pulmonary tuberculosis (adult).

Far advanced	19	(20.8+ per cent)
Moderately advanced	20	(21.9+ per cent)
Minimal	46	(50.5+ per cent)
Unable to classify on one examination	6	(6.5+ per cent)
Total	91	

20.8+ per cent of the 91 cases far advanced as compared with 78.9+ per cent either moderately advanced or minimal.

Another interesting feature of all tuberculosis studies is the age distribution of the disease. So far as our clinic figures indicate, Idaho is no exception to the general rule. Of the 261 persons found to have some form of tuberculosis, 198 were under the age of thirty-five and only 63 above. Tuberculosis is characteristically a disease of young adults throughout the world.

TABLE 4

Classification of tuberculous patients by age.

Under 5 years	10
5-15 years	76
15-25 years	54
25-35 years	58
35-45 years	36
45-55 years	22
55-65 years	5
Total	261

HEART DISEASE FOUND

The findings in respect to heart disease were no less interesting than the figures for tuberculosis.

In the first place we demonstrated much more cardiac pathology than we had expected to be able to find with our limited facilities. We had no polygraph, electrocardiograph or similar apparatus for the detailed study of the heart, only a stethescope and a blood pressure instrument in addition to the original equipment of ears, eyes and fingers. If there had been time and apparatus for more technical observations, we should no doubt have unearthed many more cardiac abnormalities. As it was, we found a total of 391 heart lesions, distributed amoung 265 patients.

TABLE 5

Classification of heart abnormalities.

Aortic valve disease	10
Angina pectoris, suspected	7
Auricular fibrillation	5
Auricular flutter	1
Bacterial endocarditis	6
Congenital heart defect	1
Coronary disease, suspected	2
Extrasystoles	28
Heart Block, suspected	1
Hypertension	26
Hypertrophied or enlarged heart	40

Hypertrophy and dilatation	2
"Irritable heart"	14
Mitral valve disease	127
Myocardial degeneration	21
Pathology of aorta, suspected	7
Poor response of heart to exercise	65
Sinus arrhythmia	11
Toxic myocardial condition	1
Vascular sclerosis	16
Total heart abnormalities	391

TABLE 6

Classification of cardiac patients by age.

Up to 5 years	2
5-15 years	73
15-25 years	65
25-35 years	38
35-45 years	29
45-55 years	29
55-65 years	19
65-75 years	7
75-85 years	3
Total patients	265

It is specially significant that of these 265 cardiac patients, 106 gave a definite history of rheumatic fever and 15 of chorea.

The age incidence of the various types of heart lesions is also of interest. As shown in Table 7, 59.5+ per cent of the lesions were found in persons under thirty-five and 40.4+ per cent in persons over thirty-five years. Consequently we are justified in stating that over half of the heart disease found was due to infectious processes in young people.

TABLE 7

Classification of heart lesions by age.

	UNDER 35 YEARS	OVER 35 YEARS	TOTAL
Aortic valve disease	2	8	10
Angina pectoris, suspected	1	6	7
Auricular fibrillation	0	5	5
Auricular flutter	1	0	1
Bacterial endocarditis	5	1	6
Congenital heart defect	1	0	1
Coronary disease, suspected	0	2	2
Extrasystoles	19	9	28
Heart block, suspected	0	1	1
Hypertension	7	19	26
Hypertrophied or enlarged heart	20	20	40
Hypertrophy and dilatation	0	2	2
"Irritable heart"	12	2	14
Mitral valve disease	92	35	127
Myocardial degeneration	2	19	21
Pathology of aorta, suspected	0	7	7
Poor response of heart to exercise	58	7	65
Sinus arrhythmia	11	0	11
Toxic myocardial condition	1	0	1
Vascular sclerosis	1	15	16
Totals	233	158	391

OTHER CONDITIONS FOUND

No one can make careful chest examinations without gaining a general idea of the patients' state of health and coming upon many other pathologic conditions. Among the 772 persons examined in the clinics, in addition to the heart and lung lesions diagnosed, there were noted in all 1100 other abnormalities of varying degrees of importance. They are summarized below in Table 8.

TABLE 8

Classification of miscellaneous conditions found.

Acute throat infection	13
Allergy	51
Anemia	1
Arthritis, chronic	4
Bronchiectasis	14
Bronchiectasis, suspected	29
Bronchitis, diffuse asthmatic	1
Calcium deficiency	3
Carcinoma of breast	1
Carious teeth	32
Cervical adenitis	1
Chorea, active	13
Chorea, suspected	2
Congenital cataract	1
Diabetes mellitus	5
Empyema, old	5
Epilepsy	1
Fatty tumor	1
Foreign body in lung	1
Gallbladder disease, suspected	1
Gonorrheal arthritis	1
Intracranial pathology, suspected	2
Lung abscess, old	1
Lung abscess, operated on	1
Lung abscess, suspected	3
Lumbar abscess	1
Lung malignancy	1
Mastoid infection, chronic	1
Mastoid infection, suspected	1
Malnutrition in child (severe)	3
Mass in breast, probably malignant	1
Migraine	1
Osteomyelitis, old	2
Oral sepsis	39
Parkinson's syndrome	3
Peptic ulcer	1
Pharyngitis, chronic	25
Pleuritis, acute	1
Pleuritis, chronic adhesive	10
Pleural effusion, old	2
Old empyema with unexpanded lung	1
Postpneumonic effusion	1
Thickened pleura	57
Pneumoconiosis	3
Pneumoconiosis, suspected	1
Pneumonia, bronchial	3
Posttularemia syndrome	1
Pulmonic consolidation, type unknown	1
Pyorrhea	49
Rickets	13
Rachitic changes, old	33
Rheumatic infection, active	17
Skin disease, chronic	2
Smallpox	1
Syphilis, suspected	3
Thyroid disease, suspected	41
Tonsils, infected	129
Tonsils, suspicious	72
Umbilical hernia	1
Upper respiratory or sinus infection	52
Excessive overweight	17
Seriously underweight	320
Total	1,100

COMMENTS

There are several points worthy of note in the findings of this clinic which I wish to discuss briefly.

1. The radiographs of the chest were of extreme importance in detecting the early cases of

lung pathology, whether tuberculous, bronchiectatic or malignant in character. In many instances the symptoms and physical signs were too scanty to serve as a basis for a definite diagnosis, whereas the films showed unmistakeable evidence of pathology. Routine x-ray examination of the chest, including both fluoroscopy and radiographs, is indicated in most of the obscure medical conditions that come up for differential diagnosis. Such observations would disclose many early, curable cases of tuberculosis or other lung disease, and at the same time would avert many loose opinions of thyroid disorders and neurasthenia.

2. It was found that most of the minimal cases of tuberculosis had not been under the observation of a physician. These people were dragging about for the most part without knowing what was wrong with them. This fact graphically illustrates the need for periodical examination of the general population and the necessity of physicians training themselves to make this type of examination searching and thorough.

3. An astonishing amount of heart disease was found in this comparatively simple examination. More than half of these lesions occurred in persons under the age of thirty-five years. The so-called "irritable heart" was found six times as often in persons under thirty-five years as in those above that age. A poor response of the heart to exercise as the only or principal cardiac abnormality was found fifty-eight times in individuals under and only seven times in persons over thirty-five years. Irregularity in the form of sinus arrhythmia or extrasystoles was common. Many of these patients had been unduly alarmed by being told by a physician that they had irregular hearts, without distinction being made between these two comparatively innocent forms and the serious types of irregularity, such as auricular fibrillation or heart block. Disease of the mitral valve was the commonest heart lesion found, occurring in 127 cases of the 265 with cardiac abnormalities.

4. There were forty-three cases in which a diagnosis of bronchiectasis was either made or strongly suggested, and fifty-two of definite infection of the sinuses or upper respiratory tract. The prevalence of these chronic head infections and their role in producing the distressing basal lung infections must be appreciated and evaluated anew.

5. Of the four cases of pneumoconiosis diagnosed or suspected, one which was well developed occurred in a man of fifty-eight years who had never been in a mine of any sort and had never worked in minerals. He had all his life been a carpenter or worker in wood. Many of the places where he had been employed, especially in earlier days, had had no provision for the removal of the dust from the air.

6. In spite of all our propaganda about tonsils, the general public are still evidently far from being convinced that the best place for tonsils is in the museum jar; 201 of the 772 persons examined had tonsils that should have been removed.

CONCLUSIONS

1. Seven hundred and seventy-two persons were examined during the summer of 1928 in the chest clinic put on by the Idaho Tuberculosis Association. Three hundred and sixty of these patients were also given radiographic examination.

2. Of these individuals, 261 had or were seriously suspected of having some form of tuberculosis. Of them 91 were adults with active pulmonary tuberculosis; 72 other adults were pulmonary tuberculosis suspects. Twenty-five children under fourteen years of age were found to have active chest tuberculosis, and 28 more were tuberculosis suspects. The other types of tuberculous disease were found in fewer instances.

3. Only 19 cases of far advanced tuberculosis of the lungs were found among the 114 definite cases of chest tuberculosis.

4. Of the 261 people found to be tuberculous, 198 were under and only 63 over thirty-five years.

5. Heart abnormalities were found in 265 of the persons examined. One hundred and twenty-one of these individuals, or 45.6+ per cent, gave a definite history of either rheumatic fever or chorea in early life. Of the total cardiac abnormalities found in these 265 patients, 233 of the lesions occurred in persons under and 158 in those over thirty-five years of age. It is fair to assume that most of the lesions in the persons under thirty-five years were due to infectious processes and, therefore, to be regarded as preventable.

6. It seems to me extremely significant that, of the 772 individuals examined, 320 should be seriously underweight. Certainly such persons are more susceptible to infections and slower to recover from the diseases that attack them. More attention should be given to nutrition by the medical profession, the educators and the parents of Idaho.

PULMONARY TUBERCULOSIS

LESIONS REVEALED BY X-RAY EXAMINATION*

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The medical profession recognizes the valuable contribution that pathology makes in the study of disease. It is used in every department of medicine. But we often fail to use it as efficiently as we might. It is rather evident that its application to roentgenologic affairs is still somewhat in the pioneering stage. Many even yet fail to recognize the relation of pathology to roentgenology. Much good can accrue by regarding plates of organic structures as though they were pathologic specimens, and attempting to analyze and interpret abnormal shadows in terms of pathology.

A break in a bone often throws such a characteristic shadow on the plate that the diagnosis is self-evident and an analysis of the condition may only be made in the interest of treatment and not of diagnosis, that is to say, the break in the continuity of bone makes the diagnosis, while an analysis of such features as overlapping, comminution, angulation and other factors assist principally in the treatment of the case.

But when diseases of the lungs are under consideration, the conditions are quite different. The pathologic lesions may be very evident but often they are not characteristic of any particular disease. Shadows representing fibrosis or exudation may be found in a number of pulmonary diseases. Diagnosis is not made by one self-evident finding, as in the case of a fracture, but frequently a great variety of roentgen lesions must be studied in correlation with the physical and clinical findings before the diagnosis is finally made.

It is very necessary that we become familiar with the different types of roentgen lesions seen in pulmonary tuberculosis, if we are to attain any degree of perfection in interpretation. The lesions are not photographed upon an x-ray film; they are seen there in the form of silhouettes or shadows and there is one outstanding factor which makes interpretation possible. This is known as density.

DENSITY OF LESIONS

If it were not for the different degrees of density seen on x-ray plates, interpretation of them would be utterly impossible; so the factor of density is decidedly important and fundamental. Let me give you an example of the meaning of density. I can think of no better illustration for explaining the different types of density than the dental radiogram.

A tooth is seen with a large metal filling in its crown and an abscess at its root. The portion of the tooth which is unaffected by disease is, of course, normal tissue. It casts a characteristic shadow on a film and the density of the shadow is classified as a normal density. The bone tissue surrounding the root of the tooth casts a shadow less dense than the shadow of the tooth, yet it is classified as a shadow of normal density for the reason that we are viewing normal bone tissue. When some of this alveolar bone is destroyed by a dental abscess, the absence of bone tissue is clearly portrayed on the film as a shadow of decreased density. On the other hand, if material of greater density, such as a metal filling, replaces tooth structure, the density of that shadow is known as an increased density.

To recapitulate, then, normal density as seen on the x-ray plate is the term applied to the density of the shadow of normal tissue; decreased density is found when there is a loss or destruction of tissue, and an increased density is seen when abnormal compact tissues or structures take the place of or are added to normal tissues. These are fundamental rules which can be applied to any tissue structure that is radiographed, but let us now make the application to pathology as we find it in lung tissue in pulmonary tuberculosis.

When shadows of pulmonary tuberculosis are interpreted in the light of their densities, their size and contours, certain interpretative values are obtained. We learn something regarding the type, the location, the local or general distribution, the age, the diversity of type and age, and the activity of lesions.

CLASSIFICATION

1. Density of lesions.
    Increased density lesions.
    Decreased density lesions.
2. Type of lesions.
    Conglomerate tubercle lesions.
    Caseous lesions.
    Calcified lesions.
    Cavity lesions.
    Fibrosis.
    Exudation.
3. Site of lesions.
4. Distribution of lesions.
    Local.
    General.
5. Age of lesions
    Recent, old.
    Acute, chronic.
6. Diversity of lesions in type and age.
7. Activity of lesions.

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TYPE OF LESIONS

Under the heading, type of lesions, we shall first consider the conglomerate tubercle. The primary tubercle is too small to be depicted upon an x-ray plate. The earliest lesion that can be seen is a mass of pathologic tissue, produced by a coalescence of many primary tubercles. This is known as a conglomerate tubercle. It may be described as a lesion of increased density, having a rounded or irregular outline, and varying in size from that of a millet seed to one or several millimeters in diameter. Very frequently it does not exist as a distinct entity, for the reason that another very important shadow intervenes, obstructing its visibility to a great extent or blotting it out of the picture entirely. This is the shadow of exudation which surrounds the inciting lesion. Mention is made of this shadow at this time because of its frequent occurrence in association with the conglomerate tubercle. (It will be described later). When the tubercle is seen without a surrounding zone of exudate, it is in most instances healed. The healed tubercle is nodular and has a discreet outline.

We shall next consider caseous lesions. A tuberculous process, as it progresses from tubercle to cavity formation, reaches a high degree of activity during the stage of caseation. Consequently it is surrounded by much exudation and, like the tubercle, the amount of exudation may be so great that it loses its identity because of the superimposed exudative shadow. When the exudation is not too profuse, the caseous lesion is seen as a shadow of increased density. This density is greater than that of a conglomerate tubercle. Its size may be very small, comparable to the size of a conglomerate tubercle, or it may be very large as when tuberculous lobar pneumonia has undergone caseous changes, which it very frequently does. It is seen best in fibrocaseous tuberculosis, as exudation does not obstruct its visibility to such a marked extent in this type of pulmonary tuberculosis.

Calcified lesions, since they are formed from calcium salts, are the most dense of all pulmonary lesions, and little difficulty is encountered in interpreting them. They are usually round, conforming to the shape of the gland or caseous mass which was impregnated with these salts.

A lesion caused by cavitation, namely a tuberculous cavity, is comparatively easy of interpretation. This is especially true, if the contents of the cavity have been expelled. As it is usually seen it is a lesion of rounded contour, whose boundary is well outlined, due to the increased density of the fibrous tissue wall which surrounds the decreased density, caused by the absence of tissue in the cavity. We are learning to discover cavities of much smaller dimensions than formerly. Cavities no larger than a hazel-nut may sometimes be found, following or during a tuberculous lobar pneumonia. These have been formed by the expulsion of caseous material, leaving small cavities as a result. When a cavity is filled with fluid, it may be overlooked, as it resembles a large exudative shadow, but when only partially filled the fluid level assists in the interpretation of a cavity.

Fibrosis, the next lesion under consideration, is very dense. When it is present in a lung, it will usually stand out distinctly, and is seen through superimposed shadows. It is most frequently seen as strands arranged in a radiating manner, beginning as wide shadows at the hilum, and becoming smaller as they approach the periphery of the lung. In the periphery the markings frequently form reticulated shadows or a network, in contradistinction to the linear arrangement in other portions of the lung. Reticulated shadows may, however, be found in any location in the lung in fibrocaseous and fibroid types of tuberculosis.

When reticulated shadows are found in the periphery of the lung, at least one point in differential diagnosis must always be considered. Passive congestion of the lungs, due to a decompensated heart, shows reticulated shadows in the periphery as one of the x-ray features. These shadows are due to the engorgement of the smaller blood vessels. Differential points are the generalized bilateral distribution in the peripheral zones of both lungs, and the fact that the markings are generally coarser than in fibrosis. Fibrosis is never so generalized in the peripheral zones, excepting occasionally in the fibroid type of tuberculosis.

It is not generally realized how extremely important are the exudative shadows found in pulmonary tuberculosis. Evidences of exudation are found in association with the other lesions of tuberculosis during the entire period of their activity. Aschoff, the noted German pathologist, makes a classification of what he terms tuberculous exudative lesions[2] as follows: (a) Acinous exudative processes, (b) lobular-caseous phthisis, (c) lobar-caseous phthisis.

This is purely a pathologic classification, but I believe that x-ray pathology falls rather readily into this terminology. The x-ray literature uses different terms, but apparently has the same lesions in mind. Very frequent mention is made of a parenchymatous lesion, parenchymatous infiltration or focal exudation. It appears evident that we have a lesion in mind which is comparable to the acinous exudative lesion in Aschoff's classification. It would be helpful to select a term that would be more universally used by pathologist, internist and roentgenologist alike.

These lesions are frequently found in the apex or subapical region in the incipient case. In this condition a zone of exudate surrounds active tuberculous lesions, such as conglomerate tubercles or caseous nodules. The exudate is greatest in amount immediately surrounding the inciting lesion, and decreases gradually in amount toward the periphery of the zone of exudation. Expressed in roentgenologic terms, the density of the shadow is greatest at and immediately surrounding the inciting lesion, and is seen to shade off in a lesser and lesser density as the periphery of the shadow is approached. For this reason it is difficult to determine where abnormal density leaves off, and normal density begins, since there is no limiting outline. The inciting lesion is generally not seen on account of the superimposed dense exudative shadow. Often this type of exudative shadow produces a mottled appearance, and is frequently alluded to as "mottling." Because of some resemblance to snowflakes or cirrhous clouds, the shadows caused by these lesions are sometimes called snowstorm or cottony shadows. Mottling is a better term.

Instead of the terms lobular and lobar caseous phthisis, American pathologists classify these two exudative processes as tuberculous lobular and lobar pneumonia. X-ray literature coincides with this classification in terminology. In tuberculous pneumonia the exudate is confined, in a general way at least, to lobules and lobes in lung tissue. For this reason the terms tuberculous lobular and lobar pneumonia are quite consistent. The shadows of tuberculous lobular pneumonia are small with ill-defined borders, while lobar pneumonia shadows are large, occupying the greater part of a lobe or several lobes. Here, again, it must be remembered that the inciting lesions of tuberculosis are often hidden from view by the dense shadows of exudation.

SITE AND DISTRIBUTION OF LESIONS

Thus far we have considered lesions mainly according to their appearance or type. Let us now consider them as regarding the location in which they are found. The site of lesions in lung conditions is frequently of prime importance. For instance, if small mottled lesions are seen in the apex or axillary portion of the first or second interspaces and the remainder of the lung is free of lesions, the significance of this x-ray finding is extremely important. Its value is comparable to the finding of persistent, moderately coarse rales in the apex in a physical examination.

The x-ray method furnishes a visual, the stethoscopic examination an auditory means, of interpretation of localized pathology. If similar shadows are found scattered in a generalized manner throughout a lung field, they lose this important significance, as so many other conditions, as for example bronchopneumonia and acute bronchitis, may account for their existence. It is this type of x-ray lesion that is incorporated in the Trudeau Sanatorium "Five Diagnostic Criteria of Pulmonary Tuberculosis[3]." This indicates the importance attributed to it. (In the Trudeau classification this lesion is termed a parenchymatous x-ray lesion).

DIVERSITY OF TYPE AND AGE OF LESIONS

Other important factors which have apparently not been much stressed in x-ray literature are the factors of the diversity of type and age of lesions. They will be considered conjointly. When we deal with acute conditions, such as bronchopneumonia or acute bronchitis, the lesions showing on the x-ray plate are all of one age and one type. They have the fuzzy outlines of inflammatory pathology of recent origin. In tuberculosis, in the early stages, the same thing may obtain, but if it has existed for some time and become chronic, the lesions seen are often of differing ages and types. There may be early conglomerate tubercles and exudative lesions of recent origin and also older pathology of fibrosis, calcification and cavity formation, which have existed for a long time, possibly for years.

For example, if we see the small discreet nodular shadows due to healed tubercles in the upper portion of one lung, with linear striations of fibrosis also present in that location, and in the opposite lung early conglomerate tubercles and exudative shadows, we have manifestations of both late and early lesions. We plainly see the footprints of a disease as it has tramped through different parts of both lungs; first, in the upper part of one lung, followed by quiescence in that situation, and then a recent invasion of the opposite lung. When we see lesions so diverse in character and age, tuberculosis is always a probable diagnosis; in fact, it is often positive, when lesions of marked diversity of type and age are found.

ACTIVITY OF LESIONS

There has been much controversy over the question whether activity of tuberculous lesions may be determined from x-ray findings. Krause, Associate Professor of Medicine at Johns Hopkins, in a very interesting and instructive article entitled, "The Anatomical Structure of Tubercle from Histogenesis to Cavity," shows what a prominent part exudation plays throughout the entire active existence of a tuberculous lesion. He indicates how closely allergy and exudation are linked, and in a very significant statement he says this: "The essence of allergic reaction is *exudation,* appearing as inflammation in solid tissues, and effusions in serous spaces." He says that allergy is established at approximately the second or third week after infection; that the allergic reaction is manifested by the appearance of exudation, and that it exists during the entire active stage of a tuberculous lesion. If we are to credit Krause's observations regarding allergy, which in my opinion are extremely valuable and significant, we must come to the conclusion that allergy is manifested chiefly by exudation and that this exists as long as tuberculosis is active and disappears when the disease becomes quiescent.

How important this is! If the x-ray plate discloses exudative shadows in association with tubercluous lesions, and if this exists only during the active stage of a lesion, then it may be rightly assumed that a lesion is active if it is seen to be surrounded by exudate. It is very certain that the x-ray plate does demonstrate the presence of exudate, and its gradual diminution and final disappearance are also noted in the case that recovers. Is it not reasonable to conclude, in the face of these facts, that the x-ray finding of exudative shadow is quite as significant as the physical finding of persistent moist rales? I am thoroughly convinced that it is. There should be no doubt in anyone's mind that x-ray findings are important in the determination of the activity of lesions.

The fluoroscopic method of examination will be mentioned only very briefly, as its chief value does not lie in the determination and interpretation of types of pulmonary lesions, for we see only gross pathology in this way. The stereoscopic plate examination is infinitely more satisfactory in evaluating the nature of minute microscopic pathology. However, when functional or mechanical manifestations are under consideration, the fluoroscope tells us a great deal, and the plates very little in comparison.

We can see how well, or how poorly, the lungs aerate on deep inspiration and on coughing, and the extent of lung expansion is determined by this means, not by seeing the lungs themselves expand, but by noting the mechanical action of the chest walls and the diaphragm. Abnormal action of the diaphragm in the form of "lagging" or immobility of one side will lead one to closer study of the case, and indicate the necessity of plate examination, as such findings suggest the possibility of tuberculosis. More could be said relative to the use of the fluoroscope, but time will not permit.

Nothing has been said regarding miliary tuberculosis, nor pulmonary tuberculosis in children, but these are in themselves subjects for separate consideration.

In conclusion, this paper has attempted to show:

1. That x-ray plates exhibit normal shadows in the form of increased and decreased densities.

2. That abnormal densities represent pathologic lesions.

3. That localization of lesions in an apex or subapical region is very indicative of the existence of pulmonary tuberculosis.

4. That a diversity of type and age of lesions is found more frequently in tuberculosis than other lung conditions.

5. That coexistent exudation proves the activity of tuberculous lesions.

6. That all of these factors contribute to the making of correct interpretations of tuberculous pathology of the lungs.

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TRICHINOSIS. Henry F. Stoll, Hartford, Conn. (*Journal A. M. A.*, March 9, 1929), reports on three cases of trichinosis. He asserts that two of the cases presented diplopia and one, polyserositis. It would seem that the history of severe pains in the legs, and the presence of an eosinophilia in the blood and pleural effusion together with the strong precipitation test, establishes the diagnosis of trichiniasis with reasonable certainty, even though trichinae are not obtained in the muscle excised. The finding of 85 per cent of eosinophils in the pleural fluid would favor trichiniasis, even though trichinae were not found.

ACUTE DISCHARGING EARS

INDICATIONS FOR OPERATIVE INTERFERENCE, WITH EPITOMIZED ILLUSTRATIVE CASE HISTORIES*

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The physician in general practice is the refuge of the families under his care for all manner of ills. Thus the responsibility of caring for middle ear suppuration is frequently his, especially as this condition is apt to be a consequence of a head cold or upper respiratory infection. If an acute middle ear abscess responds rapidly to treatment, there is no particular difficulty in the management of the case. However, as so frequently hapens, if the acutely infected ear fails to respond to early incision of the drum and wick drainage or frequent irrigations, it is often a question of some nicety to know if the mastoid cavity be involved or if serious complications due to extension beyond the mastoid be imminent. It is with the idea of pointing out some of the signs by which these things can be recognized that this paper is presented.

It is not difficult to recognize an acute middle ear abscess when typical. The marked reaction in the fundus, the absence of landmarks, and the history of pain, with perhaps a spontaneous rupture of the drum, make the diagnosis clear. There are, however, cases in which there is a middle ear infection and even a mastoid infection, with slight or no changes in the drum and without aural pain (case 9). Such cases may be easily missed. Given a patient with a fever unexplained by any finding in the general condition and in which the ear drums are perhaps thickened with loss of luster, even though there is little redness and no bulging, an exploratory myringotomy under aseptic conditions is advisable (case 8). Where spontaneous rupture has occurred, a myringotomy should always be done as the drainage is rarely, if ever, sufficient.

With free drainage and adequate cleansing treatment, an otitis media should heal or show marked improvement in about three weeks or less. If the discharge is still profuse in the third week, or if it continues at all in the fourth or fifth weeks, the possibility of bone necrosis necessitating mastoidectomy must be considered. An aural discharge for five or six weeks so jeopardizes the function of the organ that operation may be necessary to preserve the hearing.

The most frequent pathognomonic sign of mastoid involvement necessitating operation is a sagging of the posterosuperior canal wall and a consequent narrowing of the lumen. There is an obliteration of the sulcus between the canal and the drum, and the swelling of the canal wall is exquisitely tender when touched with a cotton tipped applicator. Other signs are fever which may or may not be present in adults, tenderness over the mastoid, particularly if persistent, edema over the mastoid process and diminution of hearing. Tenderness of the mastoid on pressure, however, is an unreliable symptom. The author has recently seen three exquisitely tender mastoids in influenzal patients which proved entirely negative on further examination. Conversely, in cases 2, 6, 9, 10 and 11 there was no mastoid tenderness, despite the existence of an operable mastoiditis.

In an ear still discharging slightly after the fourth week, the appearance of a small, nipple-like projection on the drum indicates mastoid involvement (case 13). Diminution in the amount of pus, with an increase in fever or retroaural tenderness, is a very positive indication for operation (case 3). Any or all of these signs may be absent and there may still exist a dangerous mastoiditis. Edema behind the mastoid process shows an interference with the circulation in the mastoid emissary vein which is indicative of involvement of the lateral sinus and is, therefore, a sign of much more severe moment than swelling over the mastoid cortex.

In all acute running ears the bacteriology should be studied both by smear and culture, these examinations being made as soon after myringotomy as possible because secondary infection masking the true etiologic organism may occur early. The smear will show the presence of encapsulated organisms which do not have a capsule on artificial media, and the culture will diffentiate streptococci which in the smear often break up and appear as diplococci. A blood plate should be made for hemolysis. The variety of organism will vary the treatment and the prognosis, and the value of bacterial study will be apparent as we consider the different organisms encountered.

The most aggressively virulent invader is the hemolytic streptococcus. This bacterium causes rapid destruction of the bone and at times causes invasion of the tissues beyond the limits of the mastoid, even before there is any bone destruction. In an ear with a hemolytic streptococcus infection one must be on the alert for complications even during the first week (case 1). This organism, unless the abscess formation is well walled off, will cause a progressive reduction in the red blood cells and hemoglobin, and cases are seen where this progressive anemia has been the only indication of invasion of the sigmoid sinus, typical fever and even a leukocytosis being absent. It is thus essential in a hemolytic streptococcic case to have frequent estimations of the erythrocytes and hemoglobin to be forewarned of such invasion before it is too late for operative interference (case 7).

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The streptococus mucosus capsulatus, which is the type three pneumococcus, is the most insidious organism, in that mastoids frequently go on to complete destruction, although the midle ear has entirely healed, and without pain, fever or tenderness. The patient is frequently free from subjective symptoms until he develops headaches indicative of intracranial invasion or an external rupture (cases 1 and 11).

The other types of pneumococcus are less virulent and do not invade in this insidious manner. It has been frequently noted that mastoiditis in a diabetic individual rarely gives any symptoms by which the patient is aware of the disease until marked destruction has occurred (case 2). Thus, given a running ear in a diabetic, the mere absence of improvement is a strong indication for operation. Incidentally, most of the diabetics are infected by the type three pneumococcus. If such a case is allowed to progress, the first signs of extension beyond the middle ear, even though the latter has cleared up, may be headache, especially on the diseased side, or rupture through the mastoid cortex.

Other organisms less frequently found are the nonhemolytic streptococcus, hemolytic staphylococcus, staphylococcus aureus and influenza bacillus.

The classical signs of mastoiditis may be entirely absent and yet the infection may be so severe that intracranial complications are under way. As just pointed out, this is noted in a diabetic or in type three pneumococcus infections. It also occurs in hemorrhagic mastoiditis and in primary jugular bulb thrombosis. In hemorrhagic mastoiditis we have a running ear with a septic temperature and probably a gradual reduction of the red blood cells and hemoglobin. There are no signs of mastoiditis. On operation, however, the blood vessels of the mucosa of the mastoid are found to contain many thrombi, and this process is beginning to invade the lateral sinus. There is no destruction of bone and no pus found in the mastoid cavity (case 9), but if operation is not done early and thoroughly, a lateral sinus thrombosis results.

In the primary jugular bulb thrombosis there is a running ear and sepsis but no mastoid symptoms, with perhaps a decrease in the erythrocytes and hemoglobin. The septic condition forces an exploratory mastoidectomy (general physical examination having eliminated any other cause of sepsis), but on operation the mastoid cavity is found entirely negative. On exploration of the jugular bulb, the source of septic infection is found. The jugular bulb is that portion of the venous circulation where the sigmoid sinus becomes the internal jugular vein and lies directly under the middle ear. The infection occurs by direct extension. This occurs usually in children and is, fortunately, a rare condition.

The three most frequent complications of a serious nature occurring in acute mastoiditis are lateral sinus thrombosis, meningitis and labyrinthitis, usually appearing after the disease has run for several weeks, but sometimes coming on in the first few days after the onset of otitis media (cases 1, 14). Brain abscess also occurs, but between eighty and ninety per cent of the otogenic brain abscesses result from chronic otorrhea and are, therefore, out of place here.

An acute exacerbation of a chronic running ear is the variety of infection most to be feared, and in these cases the acute infection superimposed upon the erosion of a chronic process often causes a rapid invasion of the surrounding tissues (case 4). It is, of course, the object in the care of every case of mastoid infection to operate before the infection extends beyond the confines of the mastoid bone. In cases where the acute mastoid infection does not seem severe, or the signs of involvement are not definite, it may be that symptoms indicative of invasion beyond the mastoid cavity first apprise the physician that mastoidectomy is necessary.

Of such extensions beyond the mastoid proper the most benign is the external rupture. This may occur through the posterior zygomatic root which frequently contains a well pneumatized forward extension of the mastoid (cases 2, 10). Rupture here gives a swelling under the fascia of the temporal muscle. The most frequent perforation in children is in the upper part of the mastoid cortex just behind the ear and gives the typical displacement of the pinna found in subperiosteal abscess. It is preceded by edema, displacing the auricle to some degree. Perforations also occur in the tip of the mastoid, internal to the sternocleidomastoid muscle (Bezold's type) (case 9), causing a deep abscess in the neck with torticollis and a sense of deep fluctuation. Rupture also occurs into the external auditory canal through the posterior wall, and if the discharge is not profuse, so resembles furunculosis that it is easily mistaken for this disease (case 11). The possible history of a running ear and the exploration of the supposed furuncle with a probe which comes in contact with eroded bone should make the differential diagnosis clear. Extension inward involves either the meninges or the sigmoid sinus (cases 1 and 3).

Large extradural abscesses with free pus and beds of infected granulations upon the dura are not infrequently found at operation, having presented no symptoms whatsoever (case 5). If the bone is removed around such areas until healthy dura is exposed, the prognosis is good. If, however, the infection is not walled off and signs of meningeal irritation occur, the prognosis is much more grave, and immediate surgical intervention is necessary to prevent extension of the process.

It was formerly thought that the presence of bacteria in the spinal fluid offered an unequivocally fatal prognosis. An occasional case, however, does recover and it is believed that in localized meningitis there may sometimes occur a bacterial invasion of the spinal canal sufficient to give positive culture. The occurrence of chills, fever, headache, nausea and vomiting, restlessness, irritability, flushed face and slow pulse in the course of a discharging ear should, of course, be taken as danger signs of the first order and immediate operation with wide exposure of the dura in both the midlde and posterior fossae should be done (case 3). When the disease has progressed sufficiently far to produce Kernig's sign, stiff neck, delirium, strabismus, pupillary and eye-ground changes, with purulent spinal fluid, it is too late to hope for much from operative intervention.

Extension into the lateral sinus is classically heralded by a chill, a sudden rise of temperature to anywhere from 102° to 106°, with a remission to normal or about normal, with perhaps the presence of a positive blood culture, especially if the specimen is collected immediately after the chill. Such a dramatic picture could not be missed, especially as the temperature recurs and the condition becomes progressively septic (cases 1, 4). These cases show no psychic involvement whatever and often feel extremely well.

The prognosis in surgical intervention is much better, if the diagnosis of involvement of the lateral sinus can be made before the symptoms become so marked. In an adult an unexplained rise of temperature to 102° and a remission to normal should be viewed with suspicion. In infants and the very aged, however, the middle ear suppuration alone can cause considerable fever and systemic disturbance. Conversely, elderly people frequently have a sinus thrombosis with very little fever.

It has been brought out recently that an unexplained fever in a mastoid case, even though on operation the bony covering of the lateral sinus appears perfectly healthy, may be indicative of invasion of the membranous sinus wall underlying the healthy bone, especially if the etiologic organism is hemolytic and there is a gradual reduction in the red blood cells and hemoglobin. On removal of the inner table, granulations or necrotic areas of the sinus which are the precursors of a thrombosis are found (case 12). Metastatic abscesses, petechial hemorrhages, enlarged spleen, subicteric color and hyperemia of the fundus are late symptoms. It is noteworthy that the amount of discharge from an ear frequently markedly diminishes at the time of the beginning involvement of the sinus.

Extension into the deeper structures of the petrous pyramid will give disturbance of function of the semicircular canals or cochlea. Labyrinthitis is divided into several pathologic groups which, however, merge into each other, some of which demand operation and some expectant treatment. The differential diagnosis is often extremely difficult. But the occurrence of vertigo, vomiting, nystagmus and perhaps loss of hearing indicate internal ear involvement of a grave nature demanding careful consideration (case 14). The eighth nerve is a direct pathway of communication from the internal ear to the meninges.

The facial nerve passes through the temporal bone and the occurrence of a facial paralysis or paresis during middle ear suppuration is an indication of osseous necrosis (cases 6, 9).

Special examinations can be of considerable assistance. X-ray plates, especially taken at different intervals, can be accurately compared so that an increase in destruction of cell outlines can be made out. Actual loss of impermeability to the x-ray by the bony structure occurs late in mastoid disease and should, therefore, not be expected before two or three weeks have passed. Skiagraphs within the first week are always negative, except for slight cloudiness, and often show no breaking down in late cases with completely involved bones. The absence of roentgenologic evidence of bone destruction is, therefore, of no diagnostic value (case 13), but when definitely positive should be given considerable importance.

The white blood count and differential are of much help. During the first week, which may be called the stage of invasion before the infection in the mastoid is well walled off, there is sometimes a high total white count with a disproportionately high polymorphonuclear count. In the second week the white blood count is generally somewhat lower, running around ten to fifteen thousand without a disproportionately high poly count. The occurrence of a marked rise in white blood cells or a markedly disproportionate number of polys after the first week of the disease evidences threatened extension beyond the mastoid cavity and indicates operation. The mastoid itself can be completely broken down without the white blood count giving any evidence of severe involvement, and indeed cases of lateral sinus thrombosis have been reported in which there was a leucopenia. Here again, therefore, a negative finding is of little value, while positive evidence is the greatest possible help.

The von Schilling differential polymorphonuclear count, which differentiates the adult neutrophiles from the younger forms, has been reported by some men to be of considerable value. Our experience, however, has shown that almost all the neutrophiles have been of the adult form even with completely destroyed mastoids, nor have we found an increase in the staph cells in our cases of sepsis.

In cases of hemolytic streptococcus infection the red blood cells and hemoglobin are a good index of the progress of the condition. A gradually progressive anemia is indicative of insufficient resistance on the part of the patient (case 7).

General surgical commonsense must not be neglected for methods of scientific precision. A general appearance of sepsis, lack of strength, loss of appetite, a pale and drawn child, with loss of weight in the course of a running ear, without any confirmatory signs of severe mastoid involvement, should in itself constitute a warning that all is not well.

Cases of severe mastoid infection do recover without operation. Conversely, there are cases in which operation is refused which later develop intracranial complications. The indications for mastoidectomy have been worked out with the idea of leading to the correction of a dangerous lesion before the development of a grave condition necessitating heroic and sometimes futile intervention.

The following are very brief abstracted case histories referred to by number in the article. Full clinical and laboratory data are not given in any instance, the history containing only the information necessary to illustrate the desired point.

Case 1. Illustrating streptococcus mucosus capsulatus infection with sinus thrombosis within the first week. Master J. R. R., age 3½, was first seen on March 22, 1928, having had measles two weeks previously and having developed an earache in the right ear with spontaneous rupture of the drum seven days before our examination, and in the left ear one day later. The ears had continued to discharge, but the physician who had him in charge in a neighboring town suspected sinus thrombosis when, on the evening before we first saw him, his temperature suddenly rose to 106.2° (R), and returned to normal, and again on the following morning suddenly rose to 106.4° (R).

When examined by us that evening the temperature was 103°. Both ears were acutely inflamed and discharging, but the amount of pus was greater on the right side. There was definite sagging of the canal wall on this side and not on the left, and the skiagraph was probably more cloudy on the right. The vault was completely filled with adenoids. General physical examination was negative.

The temperature indicated threatened, if not accomplished invasion of the lateral sinus and demanded immediate mastoidectomy. The slight preponderance of symptoms on the right side suggested that this should be attacked first.

A simple mastoidectomy was done on the right side and the cavity found involved throughout with granulations and a little free pus, but without much softening of the bone. Removal of the sinus plate disclosed a moderately thick bed of granulations and some discoloration of the sinus throughout the mastoid course. Healthy blue wall was present at the sides and pulsation was distinctly felt. There was a circumscribed meningitis in both the middle and posterior fossae, with liquid pus on the dura. As the appearance of the sinus was no worse than that frequently encountered in cases in which operation was done late in the course of the disease, it was thought quite possible that simply the removal of the diseased overlying bone might be sufficient to enable nature to take care of the sinus. The wound was only partly closed and the adenoids were removed. The left ear drum was incised.

After operation the temperature declined gradually to 101°, but the next afternoon there was a chill and a sharp rise to 104°. The right jugular vein was ligated above the common facial. The exposed sinus in the mastoid still pulsated and free blood was obtained on first puncture taken under aseptic precautions. The vein was not opened. The blood from the sinus gave a pure growth of type three pneumococcus as did the pus from the left ear.

The following day there was another chill and the temperature went up to 104°. General examination was negative. As the left ear still did not present definite indications for operation, it was assumed that the fever was due to the right sinus which was, therefore, opened. A very small mural clot was removed. It had not been sufficiently large to obstruct the lumen and there was free bleeding from both ends. Dr. Charles Butts transfused the patient with 220 c.c. of the father's citrated blood.

Three days later the temperature rose to 106° and, as there was now definite sagging of the posterosuperior canal wall in the left ear, with a type three pneumococcus infection, it was considered unsafe not to afford posterior drainage on this side also. A simple mastoidectomy was done on the left ear and the bone was found involved throughout but without evidence of sinus involvement. Dr. Butts gave another transfusion after the operation.

With supportive systemic medication and dressings the temperature declined by lysis for the next nine days, when there was another sharp rise to 105.4°. For five days more the course was uneventful when a metastatic abscess was discovered in the left shoulder. This was incised and considerable pus obtained.

From this time the patient gradually improved. Both ears became dry and all wounds healed. Convalescence was naturally slow, but on August 1, or a little over four months from the onset of the trouble, the boy was discharged and has remained well.

Case 2. Illustrating temporal rupture in a diabetic two months after onset.

W. R. S., a well developed farmer, age 58, presented himself on June 21, 1927, with the following history: Two months previously he had had influenza which "settled in his throat and ear." He had been under the care of a general physician in a neighboring town who reported there had been some discharge from the left ear but no myringotomy had been done and the discharge had dried up. For the last twelve days there had been a swelling on the left side of the head and as this was not improving the patient was referred to us.

Examination showed a large amount of edema in the left temple region, with a sense of deep fluctuation, and a small amount of edema behind the pinna. The ear drum was thick and pink, without landmarks, but neither bulging nor angry red. It had the appearance of a resolving otitis media. No sagging of canal wall or mastoid tenderness. Temperature 100°.

Skiagraphs showed complete involvement of the left mastoid bone and operation disclosed a coalescent mastoiditis with a large collection of pus under the temporal periosteum and necrosis of the sinus plate. The patient was first seen one night and operated on early the next morning, so that a refined study was not made.

During convalescence his urine showed sugar on several occasions and upon inquiry he stated he had been diabetic but had had no glycosuria for four years. The absence of subjective symptoms until external rupture occurred is typical. The wound was closed secondarily because of marked edema at the time of operation. Convalescence was uneventful but healing was delayed because of formation of a sinus. Healing complete in seven weeks.

Case 3. Illustrating meningitis from an apparently healed ear, necessitating immediate operation. Recovery.

Master M. S., a well nourished youth, 12 years of age, on December 18, 1928, developed an earache in the left ear.

On examination the drum was found red and bulging and a myringotomy was performed. He had had a simple mastoidectomy in this ear five years before, but at the time of the present illness the scar was white and without tenderness or bulging. The discharge was scant and the boy was put on the wick treatment for four days, when the discharge increased in amount and irrigations were commenced. The temperature was irregular, rising to 101° at times, but always came down after enema or laxative. As the discharge was still profuse on the twelfth day, the patient was moved from home to the hospital in order to obtain more complete study.

Culture showed hemolytic streptococcus. The leukocyte count was not high, and the polys were proportionately low. Temperature irregular, up to 102°, but returned to normal when the bowels were well evacuated. Five days after admission to the hospital the ear was entirely dry, the drum resolving, the old scar white, no tenderness, practically normal leukocyte count, and no fever.

It was intended to discharge the patient the next day, but during the day the temperature gradually rose until it reached 105° (R). He vomited twice, complained of severe headache, and had slight stiffness of the neck. Eye ground and general neurologic examination otherwise negative. Spinal puncture showed pressure 11 mm., cells 2900, sugar normal, globulin present. No organisms found.

Despite the apparently healed ear, it was believed that the meningitis was otitic in origin, and a secondary mastoidectomy was performed. The cortex had regenerated since the previous operation. No free pus was evacuated, but the central mass of granulations was unhealthy. There was slight destruction in the region of the antrum, but the dural and sinus plates were apparently healthy. These were removed in both middle and posterior fossae, but the dura showed no evidence of disease other than slight bulging and tension from the increased intracranial pressure. The absence of definite evidence of a local lesion in the dura does not, however, preclude the possibility of the meningitis being otitic.

The following day the spinal cell count dropped to 1100 cells and the next day to 250. The boy continued to improve, had no headache, never lost consciousness, and showed no evidence of meningeal irritation. On the fifth day after the operation the spinal fluid cell count was 193, and as there were no indications for further spinal tap, the puncture was not repeated. Secondary closure was effected three weeks after the first operation, and healing complete in five weeks.

Here again is an example of severe intracranial complication being the first symptom to indicate the necessity of mastoidectomy.

Case 4. Illustrating danger of acute exacerbation of chronic running ears. Late recognition of sigmoid sinus thrombosis, operation, death from cavernous sinus thrombosis.

F. C., a well nourished man about 50 years of age, was first seen Feb. 24, 1924. He had been under the care of a general surgeon for five days for earache. During this time he had had several chills with sharp rises of temperature as high as 105°, with rapid returns to normal.

At our first examination the temperature was normal. Both ear drums were practically absent and the ears were almost dry. A history of chronic discharge was obtained. There was slight tenderness over the right mastoid antrum. Neurologic and labyrinthine examinations were negative. During the night there were two chills, followed by rises of temperature to 105° and 103° respectively, with remissions to normal. W.b.c. 24,550, polys 86 per cent. Occlusion of the left internal jugular vein produced dilatation of the veins in the fundus oculi (Crow's sign).

Right mastoidectomy was immediately performed with ligation of the internal jugular vein and removal of a clot from the sigmoid sinus. Convalescence was uneventful until the fifth day, when signs of right cavernous sinus thrombosis developed. This became progressively more marked and later the condition became bilateral. Death occurred eleven days after operation.

Early recognition of the danger in acute exacerbations of chronic ears and the significance of the chills and septic temperature, leading to earlier operation, might have saved the patient's life.

Case 5. Illustrating absence of subjective symptoms in coalescent mastoiditis with dural abscess. Resistance of middle fossa dura. External rupture.

Mr. D. B., age 44, was first seen on Aug. 24, 1927, complaining of a swelling above the left auricle. He had had an earache two months before with spontaneous rupture of the drum, since which time there had been occasional scant discharge from the ear. He did not connect the swelling of the side of his head with his ear trouble.

Examination showed a marked sagging of the posterosuperior canal wall, very tender when touched with a cotton tipped probe, scant discharge in the fundus, drum red but not bulging. Mastoid region tender. Some edema with doubtful fluctuation in the tissues above the pinna. Skiagraph showed a completely broken down mastoid, confirmed on operation.

There was present a perforation of the cortex with pus under considerable pressure. A large area of the sinus plate was necrotic with a thick bed of granulations on the sinus wall. The middle fossa dural plate was necrotic, as was an area of the dura itself which permitted a probe to drop of its own weight through the dura a distance of 2 cm. No resistance was encountered, but the probe was withdrawn to prevent dissemination of the infection. The mastoid cavity was completely exenterated, and healing was complete in five weeks.

It is noteworthy that the subjective symptoms were not sufficient to cause him to seek medical aid until two months after the occurrence of the earache, and only then for relief of the swelling caused by the external rupture.

Case 6. Illustrating mastoiditis diagnosed because of facial paralysis.

Miss D. L., age 14, during an attack of scarlet fever for which she was quarantined at home, developed an earache on the right side on Jan. 13, 1928.

Examination showed a typical acute otitis and myringotomy was performed. Discharge was scant and remained so. The general manifestations of scarlet fever subsided and the quarantine was lifted on Feb. 16, 1928. There were no symptoms of mastoiditis and the appearance of the drum suggested imminent recovery, but because the discharge, even though very scant, had perisisted almost five weeks, it was thought best to take the patient down town for a skiagraph. This and other laboratory examinations had not been made because of the quarantine in a private residence.

During the night the patient developed a seventh nerve paresis on the same side, indicating a severe mastoid involvement, and was sent to the hospital for operation. Skiagraph showed a completely destroyed mastoid which was confirmed at operation. There was no mastoid tenderness, no sagging of the posterosuperior canal wall, only scant discharge and fever of less than one degree. Within a week the facial paralysis had completely recovered, and healing was uneventful.

Case 7. Illustrating hemolytic streptococcus infection with early progressive anemia and unfavorable leukocyte counts.

A. S., a boy of 10 years of age, was first seen at home Sept. 29, 1928, having been in bed a week with la grippe and having developed a pain in the left ear, followed by discharge for four days previously. The pus was profuse, the mastoid tender, all landmarks in the fundus gone, and temperature 102°.

He was sent to the hospital and myringotomy done under gas. Culture, hemolytic streptococcus. During the next three days the temperature and the ear findings remained unchanged. The blood counts were as follows:

Sept. 30, 1928—r.b.c. 4,200,000, h.b.g. 76 per cent, w.b.c. 25,500, polys 85 per cent, segmented polys 84 per cent; Oct. 1—w.b.c. 19,850, polys 83 per cent, segmented polys 83 per cent; Oct. 2—r.b.c. 3,490,000, h.b.g. 60 per cent, w.b.c. 14,000, polys 82 per cent, segmented polys 79 per cent.

Severity of the ear infection was manifest in the clinical picture. The marked drop in erythrocytes and hemoglobin in the presence of the hemolytic infection showed an aggressive destruction on the part of the invader. The marked reduction of the total leukocyte count without a proportionate reduction in the percentage of polymorphonuclears indicated a lowering of the patient's resistance. The differentiation of the immature forms showed no abnormality.

A simple mastoidectomy was performed the same day and a completely broken down coalescent mastoid was found, with necrosis of the tegmen antri. Operation was successful in reversing the progress of the disease and an uneventful convalescence was complete twenty-five days after operation.

The blood counts, in conjunction with the culture, were the only indication of the necessity for early operation. Undoubtedly a protracted case with marked systemic involvement, and possibly severe complications was avoided.

Case 8. Illustrating the necessity for ear examination in children with unexplained fevers.

R. W., a girl 7 years of age, had been in bed under the care of a general physician for a month. The illness had begun with influenza from which she had apparently recovered, but there persisted a daily rise of temperature to around 102°, for which no cause had been located. Examination by a pediatrician elicited no cause and we were, therefore, asked to examine the head.

We first saw the patient on March 22, 1928, a month after the onset of her illness. The nose and throat were negative. She had had occasional pains in the ears but no real earache. The right ear drum appeared thickened and pink but without bulging or loss of landmarks. The left drum was frankly inflamed. Both mastoids tender, especially at the tips.

Myringotomy released pus under pressure in both ears. There was slight improvement for a few days only, and then the symptoms of mastoiditis increased, despite the removal of a large mass of adenoids. On the eleventh day a double mastoidectomy disclosed a coalescent mastoiditis on both sides. Convalescence was uneventful.

Case 9. Illustrating severe involvement of the mastoid without middle ear involvement, facial paresis being the first sign of ear involvement.

Mr. W. G., age 67 years, was first seen by a general physician because of dizziness, numbness and a paresis of the left facial nerve. The history was somewhat indefinite as the patient spoke very poor English, but the dizziness, the age, and a blood pressure of 180 led to a tentative diagnosis of cerebral hemorrhage. Because of an eczematous eruption on the left auricle we were asked to examine the case.

The ear history was entirely negative, except for the skin irritation of the left auricle and a vague deafness and discomfort on the left side of the head. There was no history of earache or aural discharge.

Examination showed an entirely normal drum. There was marked cervical adenitis on the left side with apparently some deep edema around the tip of the mastoid. The mastoid itself was not tender. There was a peripheral facial paresis on the left side. Skiagraphs of the mastoids were taken and the left found very cloudy throughout with probable breaking down. Exenteration of the cavity the following morning showed a large pneumatic mastoid without free pus, with a moderate amount of softened bone in the region of the antrum, considerable softened bone along the descending course of the facial, and a perforation into the neck internal to the insertion of the sternomastoid muscle (Bezold's type).

If it had not been for the facial paresis, the mastoid probably would not have been investigated, as there was no evidence of middle ear involvement. The absence of definite involvement throughout the body of the mastoid places this case in the category of "hemorrhagic" mastoiditis. Culture from the operated bone showed no growth.

Case 10. Illustrating neglected mastoiditis with rupture through the zygoma.

Mr. P. B., a large, well nourished, vigorous man, age 35, consulted us on Jan. 10, 1925, giving the following history: Six weeks before he had developed an earache and deafness in the right ear, and two weeks later a discharge appeared which had practically subsided. He complained of pains throughout the side of his head, headache and occasional vomiting.

Examination of the left ear was negative. Examination of the right ear showed a pinkish red drum, thickened, without landmarks, but without acute redness or bulging. No mastoid tenderness. There was no discharge. The drum had the appearance of a subsiding acute suppurative otitis media. There was no sagging of the posterosuperior canal wall, but the lumen of the external auditory canal was reduced, owing to inflammation on the posterior wall resembling a furuncle. There was a very minute amount of pus coming from this area. There was a large area of edema with a sense of deep fluctuation, excruciatingly tender, extending above the zygoma anterior to the ear. Temperature 99.6°. Suspecting a zygomatic rupture of an infected mastoid, skiagraphs were taken and the right found very cloudy throughout, with definite loss of structure.

Operation that evening showed a coalescent mastoiditis on the right side, completely involving a large pneumatic bone with very marked destruction well forward into the posterior zygomatic root. Convalescence was uneventful and the wound was entirely healed in five weeks.

Case 11. Illustrating neglected mastoiditis with rupture through the canal wall resembling furuncle. Type three pneumococcus infection.

Mr. M. C., age 80, but in excellent health, never having been sick before in his life, was first seen Feb. 13, 1925, stating that three months ago he had had influenza, at which time he developed a pain in the right ear lasting one week before the appearance of a discharge.

Examination showed the canal to be partially collapsed towards the external auditory meatus with a moderate amount of purulent secretion issuing from a nipple-like projection on the posterior canal wall about 1 cm. from the external opening. The ear drum was somewhat pink, but the landmarks were visible and there was no bulging. No mastoid tenderness, fever or leukocytosis. Palliative treatment for twenty-four hours reduced the swelling of the soft tissues of the canal so that a better view could be obtained.

During the next forty-eight hours the local condition continued to improve, the ear drum was becoming more normal in appearance, and there was no discharge from the supposed furuncle. The following day, however, there was a profuse discharge from the lesion in the posterior canal wall, and exploration with a probe disclosed bare bone in the bottom of the perforation. Smears showed type three pneumococcus, and skiagraphs showed a completely involved mastoid. Operation confirmed the x-ray findings with a large pathologic exposure of the dura. Convalescence was uneventful and the case completely healed in one month.

Case 12. Illustrating toxic absorption by the sigmoid sinus through intact sinus plates.

Master B. S., 7 years old, had had a double mastoidectomy the previous year, at which time there were no exposures of either sinus or dura. The present illness began with a sore throat and double otitis media.

Myringotomy was done and both ears showed hemolytic streptococcus in pure culture. Profuse discharge continued with normal temperature for a week, when the old retroaural scars became red and bulging. These were incised under gas anesthesia, a small amount of pus evacuated, and a drain introduced through the previously operated mastoid cavity into the antrum. Dressing was done daily and the discharge gave every evidence of being about to cease.

Three weeks later the temperature rose to 101½°, and during the next three days ran an irregular course with remissions to normal, the highest recorded being 103°. Double simple secondary mastoidectomy was performed. On the right side the infected granulations were removed and the whole cavity found surrounded by apparently healthy bone. The sinus plate was entirely normal in appearance, but on removal the sinus wall was found congested with granulations thereon. The cavity of the left mastoid was found walled by healthy bone. Removal of the sinus plate on this side showed no abnormality of the vessel. There was a postoperative rise of temperature to 102° with daily excursions to a progressively lower temperature for four days. After that time there was no further fever and convalescence was rapid and uneventful.

Case 13. Illustrating absence of positive skiagraph, leukocyte count or fever. Operation indicated by duration of discharge and nipple on drum.

D. E., a well nourished boy, age 16 years, developed a severe earache on the left side while in the hospital convalescing from an acute purulent frontal sinusitis. The drum was promptly incised and treatment instituted. W.b.c. 14,000, polys 70 per cent. Culture, hemolytic streptococcus.

The mastoid tenderness disappeared, the leukocyte count returned to normal and there was no fever. The aural discharge remained profuse for sixteen days when it began to lessen. At this same time a nipple appeared on the posterior portion of the drum. The discharge almost disappeared, but the cone shaped elevation on the drum remained and a small mount of pus came through the orifice in the apex of the elevation. On the twenty-third day the mastoid was again tender on pressure, the leukocyte and polymorphonuclear counts were normal, the temperature flat, and the skiagraph showed no cell destruction. Operation the following day disclosed a coalescent mastoiditis with a small pathologic exposure of middle fossa dura. Recovery uneventful and healing complete in six weeks.

Case 14. Illustrating perilabyrinthitis occurring in the first forty-eight hours of an acute otitis media.

Mrs. I. M. S., a married woman with two children, who had had very little sickness in her life, was seen April 8, 1928, complaining of a severe cold for several days and an intermittent pain in the right ear for twenty-four hours. An acute middle ear abscess was present, but without fever or mastoid tenderness.

Myringotomy was performed. A wick was inserted and changed twice a day, the patient remaining in bed. Forty-eight hours later she had several severe dizzy spells, with nausea and vomiting lasting all day. Examination showed first degree nystagmus to the affected side. The drainage was very profuse, with considerable mastoid tenderness. Twenty-four hours later the nausea, vomiting and dizziness had subsided, as had the spontaneous nystagmus, but a first degree nystagmus to the affected side could be produced by the head movements test. The discharge continued moderately profuse with tip tenderness in the mastoid, but because of the subsidence of labyrinthine symptoms and the short duration of the disease, operation was decided against for the time being. Hearing tests showed a moderate conductive deafness, but no evidence of cochlear impairment. The nystagmus could still be elicited for about ten days, but gradually subsided as did the mastoid symptoms. The ear was entirely dry in three weeks and the patient has had no further trouble.

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COTTON DENTAL ROLLS FOR EAR DRAINS*

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It is not the purpose of this paper to bring forth new and startling principles of otology, but simply to invite attention to a new method of applying an old principle long since established. In the issue of October 16, 1926, of *Journal American Medical Association,* I called attention to the use of cotton dental rolls for ear drains which I had been using for three years, and which I have continued to use with ever increasing confidence.

The controversy still is carried on between those who adhere to the belief that better results are obtained by irrigating the affected ears of cases of acute suppurative otitis media, while most of the European authorities advise the use of dry drainage in the form of gauze. This gauze must be frequently replaced by the doctor or some other properly trained person. To obviate the necessity of highly trained personnel, who are not always available, and for more vital reasons hereafter mentioned, I have been using with great satisfaction for the past five years No. 1, inch and a half cotton dental rolls, such as dentists use to wall off the secretions from their fields of operation. These drains can be used by anyone at any time or at any place, and more often than not after the first few days, the patient replaces them for himself, even including children. These patients find they are much more comfortable when the drains are changed often.

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One of the reasons for using dry drainage in the ear is only to follow a general surgical principle, which is adhered to in all lines of surgical work, that is, to avoid positive pressure in any infected area. This principle is followed when a case of suppurative appendicitis is carefully drained without breaking up the surrounding adhesions and without irrigation. On the other hand, negative pressure is applied in the form of the capillary attraction of the gauze drain, which relieves the tension of the fluids in the surrounding tissues, and changes the cavity walls from an absorbing to a secreting surface.

To apply the same principle to the ear, let us consider briefly how an acute suppurative middle ear gets that way. Nearly every infection of the middle ear is preceded by an infection of the nose or the throat, or both. The infecting organism finds its way to the ear through or over the tissues of the eustachian tube. The passage of the offending germ is facilitated by the violent blowing of the nose during an acute infective process in the nose or the throat; by the faulty use of nasal irrigation at such times; by swimming in contaminated water or by swimming in any water while the nose and throat contain infection. Ear infections often accompany or follow the acute infectious diseases. Any disease that involves the upper respiratory tract predisposes the middle ear to the same infection. There are other less frequent causes, such as traumatic rupture of the drumhead, gun shot wounds, etc.

The bacteria most often found in middle ear infection are the streptococcus, staphylococcus, pneumococcus in their various classifications. But regardless of the offending germ, the process is the same, only differing in degree and in the time required to accomplish the result. This depends more on the relative virulence of the germ to the body resistance than to the particular kind of germ. To illustrate: A person who becomes infected while swimming, at the same time enjoying good health, is less apt to have complications than a pneumonia patient who suffers from an infected ear, although they are infected with like germs.

The middle ear is a lozenge shape cavity, deeply imbedded in the temporal bone. The edges of the lozenge are represented, respectively, by the floor, the roof and the anterior wall which contains the opening for the entrance for the eustachian tube; and the posterior wall which contains the opening of the aditus for communication with the antrum and mastoid cells. Both the opening for the eustachian tube and that for the aditus are nearer the roof than the floor.

We often hear fault found with the handiwork of our Creator in the selection of a place for the opening for drainage and ventilation nearer the top than the bottom of such rigid cavities as the maxillary and sphenoid sinuses, and the middle ear. We have but to harken back to our boyhood days for the proof of the wisdom of this provision. We have but to remember how utterly hopeless it was to try to get cider from a barrel when the spigot was in the lowermost part, but who can forget the great joy we experienced when one of the neighbor boys helped us to roll the barrel over until the spigot was near the level of the cider. The same principle will apply to the sinuses and the middle ear. No, mother Nature wasn't so dumb.

The flat sides of the lozenge are represented by the mesial wall, which separates the middle from the internal ear, while the other flat side is accounted for by the tympanic membrane; the bony wall of the hypertympanum above and that of the hypotympanum below. The mesial wall contains two openings, one, the oval window, which receives the foot plate of the stapes and, the other, the round window, which is closed by the internal tympanic membrane. The eustachian tube is the only means of ventilation and drainage for the normal middle ear; the other openings lead to cavities in the surrounding structures.

The onset of an acute infection of the middle ear is characterized by irritation, followed by active congestion of the tissues of the pharyngeal end of the eustachian tube. This process extends by the continuity of tissue up the tube to the middle ear but, before it has reached the middle ear the second stage, that of edema and exudation, has started in its wake, and if sufficiently severe, closes the tube at its lower end, making of the middle ear a closed cavity in which are confined pyogenic bacteria.

Like a flock of sheep, which moves more slowly as a gateway is approached, so it is with infection traveling from the pharynx to the mastoid cells. At each constriction of the passage way it is retarded, and in some cases arrested. It could so happen, if the edema should close the tube ahead of the infection, that the condition would begin and end with a salpingitis. If the closure should occur at the aditus ad antrum, the infection will be confined to the middle ear, and tube and the mastoid saved from infection.

As above described, the process goes on, the stage of swelling being followed by that of exudation, thus providing an excellent culture medium for the entrapped bacteria. In the presence of the body heat the bacteria rapidly multiply, and in turn cause more irritation, swelling and exudation, until the cavity of the middle ear becomes filled. At this time pressure and pain begin, and at the point of least resistence bulging appears, this being at some point in the drumhead, generally in the posterior segments.

As the secretion accumulates, the pressure increases. When sufficient to overcome the pressure within the vessels, supplying the tissues of the walls, necrosis results from the pressure and the local irritant effect of the accumulated secretion. The central part of the drumhead, being the farthest from its blood supply, is more often damaged. If the tissues of the drumhead withstand these elements long enough, the secretion, by this time pus, will be forced through the aditus to the antrum, thence to the mastoid cells. So it is for very definite reasons that we urge an early myringotomy, first, to relieve the pressure before necrosis has resulted; second, to remove the infective material before it has been forced into the mastoid cells through the aditus ad antrum; and, third, to relieve pain.

Please bear in mind that the tympanic membrane is the only part of the middle ear that you see. When it shows damage from infection, the other parts of the walls are likewise involved.

When we have done an early myringotomy, let us not stop there, for the pus is still a long way from being out of the ear. When the ear is cleansed after the drum is opened, we see a pulsation of the pus. This, we are told in most text-books, is normal for the first three to five days. Is it true? Why does the pus pulsate?

To answer the last question first, it is because the middle ear is full to overflowing and draining under pressure; so much so that every pulsation in the vessels of the walls is transmitted through the volume of pus. If this volume of pus is promptly removed by the capillary attraction possessed by a cotton dental roll, and such roll or drain promptly replaced as soon as it is saturated, there can be no pressure and likewise no visible pulsation, and incidentally no pain.

To answer the first question, it is not normal when an ear is properly cared for following a myringotomy, unless this has been delayed and the mastoid is already involved. In such cases the surface involved is so great that it produces pus faster than it can pass through the middle ear. But even in these cases many can be drained and the patient recover without operation.

The following is a case in point:

Esther S., age 8, white, Russian descent, referred to me by Dr. Ralph Fisher, May 27, 1927, with a statement of mastoid infection in the right ear. She has a history of repeated attacks of earache. The present attack began four days ago. Six hours after the onset of pain a discharge began, but the pain persisted.

The patient has the appearance of being very ill, with a temperature of 104°, bounding pulse, and seems at times irrational.

Examination of the ear shows the canal filled with thick pulsating pus, the skin surrounding the ear badly infected. The tissues over the mastoid are tender, swollen and edematous. After much difficulty the ear is cleansed by means of cotton tipped applicators. The walls of the canal are swollen, macerated and boggy. Much of the epithelium is gone, and through an irregular ragged-edge perforation in the posterior inferior segent, the pulsating pus can be seen oozing from the middle ear.

The canal is painted with 20 per cent mercurochrome, drains inserted, and an active cathartic ordered. Left eardrum head is grey but no pain. Examination shows the nose full of pus and the throat nearly filled by the tonsils.

May 28. The patient is much more comfortable, having slept most of the night. The pus is still pulsating, although drains have been faithfully used. Temperature much reduced, and patient complains of a headache. Ear cleansed with dry cotton-tipped applicator. Canal painted with 10 per cent mercurochrome. More drains furnished.

May 29. The patient is suffering from a severe pain in the left ear. The drumhead is bulging and red. Did myringotomy.

As I am using this case for as illustration, we will disregard the left ear and follow out the history of the right.

June 1. The ear is draining much less, and the canal is clean when the drain is removed. All pain and tenderness are gone. Painted canal with 10 per cent mercurochrome.

June 4. No pain or mastoid tenderness. Very little discharge, pin-point perforation. Painted canal with 10 per cent mercurochrome.

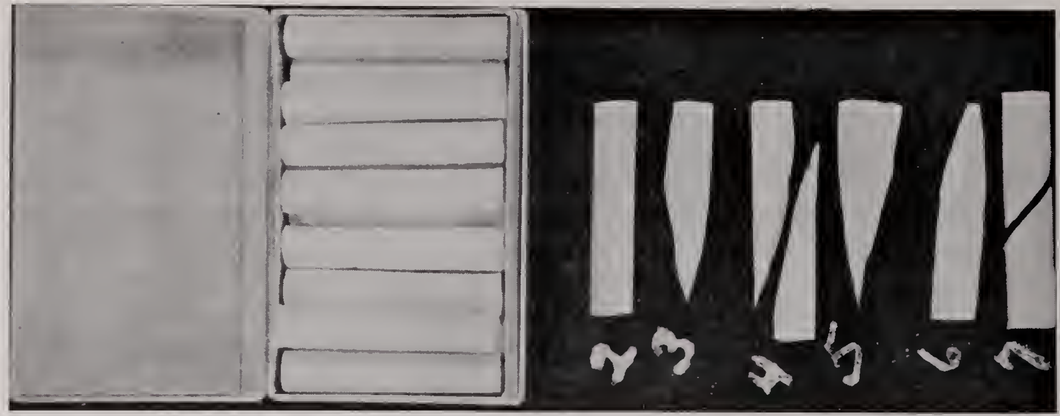
June 8. The ear is nearly dry, and requires but two drains a day. Painted canal with 10 per cent mercurochrome.

June 11. The ear dry but perforation is still present.

June 15. The ear drum closed.

The case, the history of which was just recited, had the appearance of an acute mastoid infection, and was referred to me as such, I believe the supposition was well founded. With any other treatment I think that it would have been necessary to operate on the mastoid.

The use of the drains is very simple, but the cutting of the roll before using requires some care.



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1. No. 88 powder box filled with drains, with instructions for their use in the cover. 2. Natural size roll before it is cut. 3. Showing cut side of roll. 4. Showing the two halves of a properly cut roll. 5. A roll cut too near the end which allows it to flatten. 6. A roll cut too near one end, making the drain too long and spoiling the other half by flattening. 7. Result of careless cutting. Such drains cannot reach the drum head.

The roll is grasped endwise between the thumb and forefinger of the left hand, and with sharp, long blade scissors the roll is cut diagonally across, the cut beginning not quite at the lower end of the roll and ending not quite at the upper end.

I instruct the mother to hold the roll as above described, because the fingers do not come in contact with the part that enters the ear. I mention sharp, long blade scissors to prevent the roll from being crushed in the act of cutting it. I specify beginning the cut a little distance from the lower end and ending it a short distance from the upper end so that the drain will not flatten out when being placed in the ear.

These drains come in boxes of 500, but the general stock rolls are not very satisfactory, for they are not uniform in either size or firmness (the smaller and more compact the better). By taking 5,000 I am able to get from Johnson and Johnson a specially selected lot of rolls, which are very satisfactory, at a slight increase in price.

As shown in the illustration, these rolls are put up in No. 88 powder boxes which hold twenty-five, and are given to the patient to use at home. It has been found that this box is about the right size because, first, the patient takes better care of the rolls, if he thinks he might run short before returning to the doctor's office; second, the patient should be seen by the doctor when he has used twenty-five rolls or fifty drains. If the ear is draining so freely that it requires fifty drains a day, such a patient should be seen by the doctor every day. If fifty drains will last him two days, he need not be seen oftener tha nevery two days. The number of drains required is a very accurate criterion of the progress of the case.

There are other reasons for the use of these drains other than the rapid removal of the secretion. The sizing on the sides of the roll resists the absorption of pus longer than the loose center, so if the drains are changed as soon as the center is stained by the secretion, the canal will be found perfectly clean. Thus one avoids traumatism and pain produced by much wiping with cotton-tipped applicators, and maceration and infection caused by contact with the pus.

In applying the drains, one must be sure that the small tip of the cotton comes in contact with the drumhead, which is made manifest by the twitching of the patient's face. If not, there will be an accumulation of pus between the drumhead and the tip, which will act as a dam, interfering with the drainage and will have to be removed by cotton-tipped applicators after the drain is removed.

CONCLUSIONS

1. Dry drainage for acute suppuration of the middle ear is based on sound fundamental surgical principles.

2. The greatest number of authorities are in favor of some form of dry drainage for acute suppuration of the middle ear.

3. The No. 1 inch and a half cotton dental rolls provide the best, as well as the most convenient form of this drainage.

4. More ear-drums should be opened early and more care taken of the ear after the drum is opened.

5. Where there is pulsating pus, there is also insufficient drainage.

6. The theory of normal pulsating pus in acute suppuration of the middle ear should take its place with that of laudable pus.

BRONCHOSCOPY AND ESOPHAGOSCOPY *

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"The time has passed when the lodgment of a foreign body in the air and food passages is considered as a curiosity of medicine." (McCrae.)

The various schools of endoscopy throughout the world have accomplished much in recent years toward placing this science in the limelight of modern medicine and surgery. In our country, the names of Chevalier Jackson of Philadelphia and bronchoscopy are almost synonymous. He has spent forty-four years of his life, ever since his graduation from Jefferson Medical College in 1884, solely in the interests of endoscopy. His monumental work in this field has laid the foundation and built the sturcture of many of its modern phases.

New etiologic and pathologic factors in chest diseases have emanated from his clinics. His work has inspired the internist and the roentgenologist to the study and interpretation of new physical signs and symptoms. Diagnosis of endoscopic problems has been greatly enhanced. The problem of the nonopaque foreign body has been thoroughly studied. The phenomena resulting from obstruction of the air passages have been placed before the profession. Thorough knowledge of the mechanism of obstructive emphysema, obstructive atelectasis with their signs and symptoms have made the diagnosis of nonopaque foreign bodies in the lung most accurate.

Obstructive emphysema is a common condition found when a child chokes on a peanut kernel. Fluoroscopy shows the diaphragm flattened, depressed and less excursion on the invaded side; at the end of expiration the heart and mediastinal wall move over toward the uninvaded side. The invaded lung becomes less dense than the uninvaded, from the trapping of the air by the expiratory "valve-like effect" of obliteration of the "forceps spaces" that during inspiration afford air ingress between the foreign body and the swollen bronchial wall. Air gets in and cannot get out. This partial obstruction causes obstructive which must be distinguished from compensatory emphysema, in which the ballooning is in the unobstructed lung, because its fellow is wholly out of function through complete corking of the main bronchus of the invaded side (Inglauer-Manges).

Obstructive atelectasis (Manges) occurs when the obstruction is complete; the air below the obstruction is absorbed, the lung collapses and the mediastinum moves over to satisfy the vacuum. The roentgen ray is the most valuable diagnostic means, but careful notation of physical signs by an expert should be made in all cases. Expert ray work will show all metallic foreign bodies and many of less density, such as teeth, bones, shells, buttons, etc. If the ray is negative for foreign body but indicates bronchial obstruction, a diagnostic bronchoscopy should be done.

Endoscopy, associated with the necessary aid of the internist, the roentgenologist the pathologist and the surgeon, makes a formidable team. Its modern uses are many, as the direct observations on the motility of the larynx and on new growths, strictures, diverticula, and spasms; the removal of tissues for biopsy and diagnostic aspirations of secretions from distal cavities without contamination; a means for the proper instillation of radioopaque substances, such as lipiodol and bismuth subcarbonate to aid x-ray diagnosis; the aspiration of lung abscess and bronchiectatic cavities, and the insufflation of medicine directly; the removal of foreign bodies and new growths and the treatment of pathologic and functional disturbances.

The more recent development of endoscopy is the treatment of lung suppuration, lung abscess, bronchiectasis, occasionally bronchial asthma but not tuberculosis; weekly aspirations of purulent secretions followed by medication directly, either by swab or instillation. A number of therapeutic agents have been used. Monochlorophenol, one-half per cent solution, is used in the Jackson clinic. (Manges prefers bismuth subcarbonate as an aid to roentgen ray diagnosis.) This treatment is fulfilling an old surgical principle, "where there is pus there should be adequate drainage." The amount of purulent excretion coughed up by the patient is greatly reduced by simple bronchoscopic aspiration. When medication is supplemented, the cough usually ceases for three or four days. As rest is very necessary in the treatment of any lung condition, this becomes an added asset.

The cure of lung abscess is greatly hastened. Old cases of bronchiectasis have not been cured but have been greatly relieved. In early cases much more favorable results are obtained. Many, who have seen Jackson remove a foreign body from a lower bronchus in a few seconds time without anesthesia, have proclaimed him a wizard. One day Sir St. Clair Thomson, after watching him remove an open safety pin from the bronchus of a small

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* Read before the Annual Meeting of Pacific Coast Oto-Ophthalmological Society, Santa Barbara, Calif., April 18-20, 1928.

child, said: "You Americans trust too much in Providence, but this man Jackson goes beyond Providence."

However, not in the least detracting from the honor rightfully due Jackson, if you stop to analyze his successes, you encounter a wonderfully well developed science, planned with the greatest attention to the most minute detail. This is demonstrated by a close study of the failures of bronchoscopy with well thought out remedies, for example, whether or not there is a clasp over the spring of a safety pin, which, if present presents a more difficult problem in its removal. Instruments are cleverly devised to change the axis of a straight pin or tack imbedded in a bronchial wall, principles such as "advancing points perforate, trailing points do not." Practice on the manikin, the cadaver and the dog for the beginner develops "nerve cell habit," etc.

So completely is this technic developed that any man of ordinary skill, provided he takes the time and energy to study the principles and continually practices them, should be able to do good endoscopy. "Education of the eye and fingers" is paramount. It is just as difficult to do good bronchoscopy without practice as it would be to take up a violin for the first time and play a selection from one of the old masters of music.

The removal of a foreign body should never be attempted without first following a definite procedure. Diagnosis is paramount and sufficient time should be taken for it. Seldom is the removal of a foreign body an emergency, unless there is considerable obstruction with danger of suffocation. Next, procure a foreign body of similar size and shape and place it in a manikin for practice. It is useless to attempt it if you cannot succeed in removing the foreign body from the manikin.

Peanut kernels break easily when clamped with heavy forceps. Staples must be inverted, as they usually point upward. The sharp point of an open safety pin must be guarded and the best method must be selected for its removal.

As to anesthesia, we use absolutely none in children. In adults a preliminary hypodermic of morphine is given an hour before endoscopy. A few minutes previously a swab of ten per cent cocaine solution is introduced into the right and left pyriform sinuses. If the bechic reflexes are not controlled, a swab of cocaine is then introduced between the cords into the trachea.

Reaction to be looked for in prolonged bronchoscopies, especially in cases of vegetable foreign bodies, is subglottic edema occurring usually eight to twelve hours later. Typical signs of this condition are those of intense laryngeal dyspnea of the inspiratory type, marked indrawing at the suprasternal notch and at the ensiform on each inspiration. Cyanosis is usually present but not as common as might be expected. Intubation is not the treatment but when the condition becomes urgent a low tracheotomy is absolutely indicated. This complication must always be prepared for.

It is the prediction of men deeply interested in this work that the next two decades will bring about a revolutionized treatment, both medical and surgical, in diseases of the lung.

I have selected a group of my own cases to report. I wish to credit my two coworkers, Drs. Carroll Smith and W. R. F. Luke, for their able cooperation in the handling of these cases.

Case 1. Foreign body (coin) in the esophagus.

Boy, aged four, referred by Dr. H. E. Wheeler.

History. Choking attack while playing with coins two days ago. Pain on swallowing; could swallow liquids and semisolids. Radiogram showed metallic disc size of a quarter in the lateral plane at the level of the suprasternal notch.

Esophagoscopy without anesthesia and removal of quarter dollar from below the fold of the cricopharyngeus, using rotation forceps. Time, two minutes.

Comment. Discs shown by radiogram in the lateral plane are in the eosophagus and not in the trachea. They most usually lodge just below the cricopharyngeus muscle.

Case 2. Foreign body (wheel from toy auto) in the esophagus.

Boy, aged three, referred by Dr. Paul Weisman.

History. Choking attack ten days ago and pain in the suprasternal region. Dysphagia for solids. Accompanying radiograms showed disc-like metallic foreign body at the level of the suprasternal notch. Esophagoscopy done elsewhere under ether anesthesia. No foreign body was encountered.

Condition on admission. Temperature 103°. Slight subcutaneous emphysema of the tissues of the neck. Radiogram showed disc-like metallic foreign body size of a nickel with a sharp projection from the central axis about four mm. long. Disc is in the lateral plane below the level of the suprasternal notch.

Treatment. Ice packs to neck and rectal feeding. Iced liquids by mouth. Subcutaneous emphysema and fever subsided in three days and the next day esophagoscopy was performed. Toy lead wheel with sharp attachment of solder projecting from its central axis was encountered below and partially behind the fold of the cricopharyngeus muscle. With rotation forceps the foreign body was dislodged by pushing it down till the upper rim came into view. By advancing the esophageal tube mouth so its lip protected the solder projection, the foreign body was removed. Symptoms subsided immediately. Duration, three minutes.

Comment. The presence of subcutaneous emphysema and fever are complications more important to be dealt with properly than the hurried removal of the foreign body. Attempted removal too soon might have proved fatal.

Case 3. Foreign body (bolus of meat) in the esophagus. Woman, aged sixty.

History. Consulted me three days after choking on piece of liver. She complained of painful attempts at swallowing and soreness in left side of neck at the level of the suprasternal notch. Complete aphagia for past twenty-four hours. Fever, 101°. Radiogram showed lodgment of barium mixture in upper esophagus with violent contractions of the muscles on attempted swallowing.

Treatment. Ice applications to neck and rectal fluids were instituted over night. Temperature was normal in the morning and esophagoscopy was performed. Anesthesia, 10 per cent cocaine solution, applications into left pyriform sinus, morphine sulphate gr. ¼, atropine sulphate gr. 1/150, one hour previously. I encountered more than usual resistance at the cricopharyngeus. By gentle pressure with the tube mouth the muscle relaxed and the tube entered the esophagus. Inspection of the upper esophagus revealed much swollen mucosa. The remainder of the esophagus, including the hiatus, had a normal appearance. No evidence of stricture or neoplasm found. I removed the tube, thinking I had dislodged the foreign body on passing the upper pinch-cock and that it had gone down into the stomach.

The patient swallowed liquids and solids easily for the following twenty-four hours. Then she developed complete aphagia again. The soreness in the neck was present throughout. A second radiographic study revealed the same findings as the first. A second esophagoscopy was performed the following day. Upon careful examination at the upper pinch-cock, I detected a small brownish mass behind a fold of mucosa below the muscle on the posterior wall. I dislodged it by pulling down, and was surprised to find a foreign body of large size in the invaginated posterior cricopharyngeal fold. With side curved forceps, I removed it and all symptoms subsided.

Comment. Overriding a foreign body in the upper esophagus is easily done and should be guarded against by careful inspection of the posterior fold of the cricopharyngeus. This is a common site for foreign bodies to lodge in the esophagus, when there is no preexisting pathology present.

Case 4. Spasm of the cricopharyngeus muscle.

Man, aged thirty-three.

Complaint. Chokes on liquids, chronic cough. Onset seven months ago, following influenza.

Past history. Negative. General health good. Wassermann negative. Urinalysis negative. Sputum examination negative for tubercle bacilli. Sputum contains many streptococci and staphylococci.

Present condition. Choking attacks after swallowing liquids, no difficulty with solid foods. Cough and purulent sputum associated with choking attacks. Sinuses, teeth, tonsils negative. Neurologic examination negative. Chest examination negative except for occasional coarse rales at right base. Radiographic examination of chest following instillation of lipiodol showed beginning bronchiectasis right lower lobe; otherwise negative. Fluoroscopy of swallowing function: entirely negative throughout during the act of swallowing. However, the cricopharyngeus muscle was seen to go into spasmatic contraction, closing tight the upper pinch-cock and causing the last few drops of barium in the hypopharynx to enter the larynx, setting up an attack of coughing.

Esophagoscopy. Preceded by hypodermic of morphine sulphate gr. ¼ and atropine sulphate gr. 1/150 and local application of ten per cent cocaine solution into the right pyriform sinus. The cricopharyngeus muscle was rigidly contracted and remained so longer than usual. It eventually opened with gentle pressure by the tube mouth. No organic lesion was encountered throughout the esophagus. No adhesion could be found at either the upper or lower pinch-cocks. The hiatus opened readily, no evidence of pulsion diverticulum present.

Diagnosis. Functional spasm of the cricopharyngeus, causing partial liquid aphagia with resulting aspirations into the tracheobronchial tree. This aggravated condition of several months' duration was the underlying factor in the resulting bronchiectasis.

Treatment. The principle of the Plummer water bag for the treatment of so-called cardiospasm was employed, a somewhat similar bag constructed on a No. 22 French catheter without the use of a stylet. It was introduced into the pharynx and the patient instructed to swallow it into the esophagus. Taking the distance of 16 cm. from the upper incisor teeth to the cricopharyngeus muscle, the bag was permitted to go down well through this opening. The cricopharyngeus opening was then dilated by water pressure introduced into the bag up to twelve pounds, all the patient could stand. This procedure was followed by complete relief from the choking attacks for several days. It was necessary to follow this treatment several times at weekly intervals, and not until the patient could stand fifteen pounds pressure did the choking attacks stop permanently.

Comment. This rigidity of the upper pinch-cock has been described by Jackson as a bone-like hardness which led early esophagoscopists to think it was the cricoid cartilage that was encountered. He demonstrated, however, that the resistance was on the posterior wall and was due to the orbicular muscle fibres that are essentially different in power and action from either the circular fibres of the esophagus or the oblique fibres of the inferior constrictor.

Case 5. Foreign body (fence staple) in left lower lobe bronchus.

Boy, aged sixteen, referred by Drs. McCormack and Barnett.

Complaint. Cough and purulent sputum for eight years.

History. Diagnosis of pulmonary tuberculosis had been made on account of chronic cough. Patient had been in two sanitaria in Canada but no x-ray examination had been taken and no sputum examined. Radiograms ordered by Drs. McCormack and Barnett revealed a fence staple in left lower lobe bronchus with points upward and below the level of the crest of the diaphragm posteriorly, multiple abscesses around it. No x-ray evidence of tuberculosis. Sputum examination negative for tubercle bacilli.

Past history. Boy remembered choking on several staples at age of eight, but thought he spit them out.

Problem. To do a version of the staple and remove it through the bronchoscope.

Procedure. I secured a staple similar in size and placed it in a manikin for practice for several days. When I could accomplish a version of a similar staple easily in the manikin, I proceeded to do a bronchoscopy. Anesthetic. Preliminary hypodermic of morphine sulphate gr. ¼ and atropine sulphate gr. 1/150, cocaine solution ten per cent into pyriform sinuses and into trachea. Used a 7 mm. bronchoscope and side curved forceps; also used fluoroscope as valuable aid in this case. Aspirated considerable pus from abscesses around staple and had considerable difficulty turning staple end for end without undue trauma. This accomplished, its removal was easy. Time of operation, one hour and forty minutes.

Result. Patient stood ordeal very well. No fever followed operation; slight subglottic edema for two days due to prolonged instrumentation. Profuse expectoration of pus for several days, aided by postural treatment. Radiogram two weeks later showed marked diminution in size of abscessed cavities. Patient gained twenty pounds in weight during subsequent three months and cough stopped.

Case No. 6. Foreign body (glass bead) in trachea.

Boy, aged two, referred by Dr. T. E. Hoxey.

Complaint. Choking attack while playing with glass beads two days ago.

Present condition. Fever 103°. Many coarse rales heard all over chest. Radiogram showed foreign body in trachea at corina about 1 cm. in length, resembling a bead. A duplicate of the bead produced by the mother showed heavy lead paint coating which showed in the radiogram. The duplicate was placed in a manikin and forward grasping bead forceps used for trial removal. On the first grasp with the forceps the bead crushed.

Bronchoscopy. Without anesthesia and removal of bead with bead forceps. Time of operation, two minutes. Uneventful recovery.

Comment. Glass beads are apt to crush easily and fragments are very difficult to remove.

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CROSSED EYES

THEIR CURE WITHOUT OPERATION *

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The visual act is of threefold nature: muscular, consisting of accommodation and ocular rotations, which are coordinated movements in biseeing eyes; physiologic, mechanical in the formation of the retinal images, physiochemic in excitation of the retinal elements, and physioelectric in the nerve excitations; then mental, with the brain views blended into one image and received, perceived and evaluated by the sensorium in their relations to the outer world.

Any obstruction to vision, inequality of accommodation or action of the recti, interferes with the coordination of action of the two eyeballs and affects the mental perception so that fusion or binocular images is not produced. There being no general to coordinate the brigades, anarchy occurs and the stronger prevails, the other eye turning in, out, up or down, producing strabismus which is generally inwards. The deviating eye suspends vision from time to time, suspensopsia, and after a while is forgotten by the brain, losing more and more vision; the condition of amblyopia ex anopsia.

Mental vision is not developed under three months of age; that is, the child does not recognize objects or individuals, events, mother, until that old. Both eyes are not used together until about this age, when coordination of accommodation and convergence occurs with correlation of the mental images to the outside world. All this means that babies under three months do not have straight eyes and they do not perceive objects until this age, and that, if the faculty of seeing with both eyes at once is not then developed, they squint and ultimately lose the sight of the crooked eye.

Cross-eyed and wall-eyed people are materially handicapped. Besides being only one-eyed, the cosmetic defect has a deleterious effect upon their social and mental development and in later life interferes with their love affairs and their business. For what man likes to look into the eyes of a cock-eyed maid or who wants to do business with a man who does not look one square in the eyes? Therefore, squint should be prevented, and if the eyes do not function together they should be straightened, and it can be done in almost all cases.

Every oculist is constantly told by parents or patients that their family physician had advised waiting for glasses and operation until the child has reached school age, or even till he was fourteen or fifteen years of age; that he might "grow out of it." Yes, I have seen a few but very few, who squinted in youth and had straight eyes in adult life without any treatment. I am convinced that these were not real strabismus cases, but were probably ones of partial paralysis of the externi, whose centers and nerves are most vulnerable to toxemias of disease.

The two important functions in vision are (1) accurate vision with each eye and (2) the ability to use both eyes together. The former is acquired early, the latter late and under adverse conditions, the latest function being usually the earliest lost.

The most frequent cause of deviation is a large error of refraction, in which any cause reducing the bodily resistance, as measles, whooping cough or other illness, affects the subconscious mind of the child, when it finds difficulty in seeing, and can not make the extra effort for coordination with concomittant movements and parallelism of the globes in all directions. So efforts at fusion, which is a congenital faculty, are abandoned; the better eye wins out and the other usually turns in. Hence the development of squint is usually ascribed by the parents to whooping cough, measles, etc.

If both eyes have almost the same acuity and refraction, the eyes may alternate in use. Approximately the prism degrees of convergence are thrice the diopters of accommodation. Therefore, if a child starts out with 5 D. of hyperopia, it has to accommodate this much for distance and with this would go thrice the amount of convergence, and then would, if it were not corrected by dissociation, squint 15 degrees. Then, as we have two eyes, and at first the image of each is perceived by the brain, double vision occurs, which nature does not like, and hence pulls the weaker eye further out of the way, making a secondary deviation of greater degree. The primary deviation is always in both eyes, and both eyes squint. Hence, when operation is needed, it is usually necessary to operate on both eyes. Of course, there are other causes of squint but this statement takes care of the usual cases.

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* Read before the Lewis County Medical Society, Centralia, Wash., Feb. 11, 1929.

But operation is unnecessary in the early stages, in fact seldom under the fifth year of life. Out of the last fifty cases of squinting children under twelve years of age I have operated on but three, and all of them now have straight eyes.

The first step in treatment is to treat the parents. Tell them what can be done and what can not. Insist that orthoptic treatment and lenses first be tried before any recourse is had to operation and even in these it is to be continued until stereoscopic vision is established. Explain that the usual case should have the refraction measured, lenses prescribed and that glasses should be worn all the time and ocular exercises, etc. should be continued for at least six months; that all eyes can be straightened and that they must be not only for cosmetic reasons but in order to preserve the sight. Do not allow yourself to operate until sufficient orthoptic treatment has been given.

The procedure in the average case is as follows. After two years of age exercises with the Worth amblyoscope, a stereoscope with movable sides in the doctor's office. The colored Knoll's charts for very young children and the Well's charts with the stereoscope for older ones at home will, with corrected refraction, in nine cases out of ten straighten the eyes within a few weeks.

These methods relieve excessive accommodation, get clear images in both eyes by glasses and excite the fusion center to work by the development, first, of double images and then fusion into the single image of normal vision. By these we develop the sensation of depth and full binocular vision. This can be done up to the sixth year, after that but seldom, and practically never after adolescence. Still I have had several successful cases in adults.

I have seen radical squints immediately disappear under atropinization at once or soon after wearing correcting lenses, during one visit with the Worth amblyoscope, and shortly after beginning the stereoscopic exercises.

Occlusion of the better eye for two hours morning and afternoon aids the amblyopic eye's vision, but constant occlusion may cause amblyopia and deviation and would be more likely to cause a persistence of the squint. These methods involving occlusion of the better eye are of little avail. An exercise for amblyopia may likewise be given by the test letters, the patient gradually increasing his distance away from the letters as he perceives them better.

Cases that come to operation in the third to eighth year of life sometimes achieve normal stereoscopic vision, but after this age all we can expect is a fairly good cosmetic result with the expectation that later in life a relapse or an overeffect may be the result of all our work. An overcorrection by operation should never be made. Always leave a little of the original deviation; rather advance or make stronger the so-called weaker muscle and avoid the calumny later in life of being accused of having made your patient "wall-eyed."

The treatment of squint should be given as early as it is observed. Most cases are cured by lenses and orthoptic exercises. All cock-eyes can be cosmetically cured. Get them early and get results.

Start the treatment of strabismus as soon as deviation is noted after three months of age, and you can safely promise straight eyes with binocular vision without recourse to operation in practically all cases, but wait a few years and you can promise nothing but an approximate cosmetic correction with one poor seeing eye.

REFLEX ITCHING IN ASTHMA. Ray M. Bayleat, Oklahome City (*Journal A. M. A.*, March 16, 1929), in studying cases of reflex itching in asthma asserts that only a limited number encounter such a symptom. A history of the symptom was elicited in only thirteen out of 420 patients, or 0.3 per cent. Of the thirteen patients presenting such a symptom, all were adults but two, and all had itching in the upper interscapular area. Two patients complained of marked burning associated with the itching, and two patients had both itching just beneath the clavicles and itching between the shoulders. All were very sensitive to pollen, and the itching sensation was more severe during the pollen season. Clinically, from the author's study of the asthmatic patient who complained of itching of certain areas of skin of the upper part of the chest, it appears that the itching viscerosensory reflex due to the irritation of the bronchi is manifested on the skin of the chest more frequently over an area posteriorly supplied by the fourth and the fifth cervical nerves, and an area anteriorly supplied by the third.

THE PSYCHOLOGY OF APPEARANCES *

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"Life, liberty and the pursuit of happiness" was written into the Declaration of Independence more than a century and a half ago. The medical profession has from time immemorial engaged itself with the problem of the prolongation of life. More recently has the profession developed methods, especially in orthopedic surgery, which have as really given liberty to crippled individuals as has any governor's pardon or any court's decree. The ancient art of plastic surgery has been perfected to such a degree that it is now available for the improvement of patients' mental well-being, their pursuit of happiness.

People are more sensitive at this time regarding their appearance than they ever have been for the reason that the present day individual has harder competition in the race of life, and his sensibilities are more keenly developed. The esthetic side of life is more important now than ever before.

Certainly, individuals differ as to their sensibilities to defects. One sees men and women who have marked deformities and who go about apparently heedless of them, but the psychologist and the plastic surgeon know that the apparent heedlessness is but a thin mask to cover a psychic distress. Another individual has some slight defect, so small perhaps, as to be noticeable only after it has been called to one's attention, but it manifestly produces great mental annoyance. Between these are the great majority of people having disfiguring lesions.

A large and noticeable defect offers no inconvenience or psychologic reaction, no hindrance to our success or well being when on some one else's face. But on the face of the one who is forced to carry it around day after day it becomes an increasing mental, psychologic burden. He attempts to avoid it as a criminal does his conscience. The burden of the defect does not differ with race, sex, social position, occupation, type, color or other factors, but depends on the susceptibility and psychologic reaction of the person affected.

An attorney had a slight saddle nose. He imagined that juries watched his nose and his efficiency was impaired. His request for relief was stated in these words: "I want you to take my nose out of my mind." The insertion of a piece of rib cartilage into the bridge removed the deformity, and eight months later he had forgotten his nose.

His neurosis undoubtedly resulted from the knowledge that many saddle noses are due to syphilis, and he imagined that everyone else knew this and silently accused him of having this disease. To him his nose became the symbol of syphilis, and he wished a nose which would belie syphilis and cover up his syphilis-complex.

A boy had a horse-shoe shaped scar on his upper lip, outlining the prolabium which was markedly protuberant. The upper lip had a decided notch. He had been operated upon when an infant for the repair of double cleft lip, but the broad red scar so disfigured him that his mental reaction was quite pronounced. He would not stay in town where people could see him, but worked far in the woods away from other men. He was reoperated upon, the scars then being invisible, and he has now taken up man's gregarious habits.

A young woman had protruding lips which raised the question as to Ethiopian origin. When the deformity was removed without leaving tell-tale scars, no more questions were asked, and she went among her friends, freed of her psychologic as well as her physical impairment.

A woman was injured in an automobile accident. Her nostrils were very much smaller than normal and her nose was badly deformed. Removal of the hump and reconstruction of the tip and nostrils gave her a beautiful nose which was slightly retrousee. Her mental anguish abated.

A youth while working in the woods was struck on the side of the head by a tree. The cochlea of his right ear was severed completely from his head. The deformity embarrassed him very greatly, as he could not hide his loss. When his ear was rebuilt, his psychologic reaction was much improved.

A young man was injured on the upper left eye lid. The wound did not heal for a long period, and when it did, the lid was slightly notched with a small red area above. The boy thought himself marred for life and became morose. Removal of the deformity brought his mental condition back to normal, and he returned to college to complete his education.

A woman had a pronounced hump on her nose. It troubled her greatly. Being a beauty parlor operator, her deformity impaired her business efficiency. Removal of the hump without external scars improved her appearance and mental outlook.

As a result of hereditary syphilis, a young man suffered destruction of the nasal bones and cartilages, with the shrinking of his nose until it was not much larger than the end of one's little finger. This man's psychologic reaction may well be imagined. He was unable to obtain work due to his appearance.

A young woman with a small depressed scar, the size of a pea, on the bridge of her nose was much worried by it because she had been told repeatedly that it could not be improved. The depression was built up and the scar replaced by an invisible one. She was very grateful for the treatment given her.

A young man had had paraffin injected along the bridge of his nose. Years later an attempt had been made to remove it by an incision from the glabella to the tip. He had a wide grayish ugly scar, extending the whole length of the nose with red areas of skin on both sides. The man was an artist and felt his disfigurement very keenly. The scar was excised, the paraffin removed, and the wound resutured. At a second operation a piece of rib cartilage was inserted along the bridge. The psychologic condition improved greatly.

A girl was in an automobile accident and received a cut which extended from the forehead down the bridge of her nose and across the face above the corner of her

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mouth. The scar was wide, red and depressed, and when she smiled the zygomatic major muscle, which had not been resutured, produced a disfiguring dimple. Excision of the scar, suture of the muscle, rebuilding of the depression, and careful resuturing of the skin gave a very small scar and removed her inferiority complex.

The greatest benefit to the patient is attained when the physical deformity is removed and function restored to normal. Loss of function always increases the conspicuousness of a defect.

A young man whose ears extended straight out believed that people always looked at them. The antihelix was reconstructed and his ears put back against his head. He has since forgotten them.

A woman had tatooing removed before her children should become old enough to ask embarrassing questions.

A woman lost the ala of her nose as a result of a tumor which began twenty-nine years ago. Excision of the tumor mass and rebuilding of the nose allowed her to go about without dressings on her face for the first time in more than a quarter of a century.

As a result of a motorcycle-automobile collision, a man lost his right eye and received lacerations of the lower lid. There was ectropion of the lower lid, the inner canthus was low and he had several very bad scars on the cheek, the skin above which pouched in a disfiguring manner. He was greatly depressed as he could not wear an artificial eye. Following correction of these deformities he was fitted with a prothesis which exactly matched the remaining eye and which had good movement. His psychologic debility was removed and he is now able to face the world without misgivings. Only the closest observation will disclose the loss of his eye, and the scars are invisible.

Wrinkles about the eyes, crows-feet at the eye corners, sagging of the skin of the face and double chin are conditions which produce a bad psychologic effect. Many patients suffer from one or more of these defects, and they do most assuredly suffer. These conditions, through their benign malignancy, produce a great degree of mental agony. The wrinkles, bags and folds resulting from the stretching of the skin of the face as middle life advances give the appearance of age, or worse, premature age, and the patients resent this. Not infrequently a woman comes to the plastic surgeon because she wishes to preserve the deception as to her age. Often she fears losing husband or lover, should he discover that she is his senior. Thus, one's appearance influences his or her prospects of marriage.

Of course, evidences of increasing age do not make their appearances suddenly, yet there comes a time when the realization of the disfigurement is brought home to the patients in such a way that the removal of the circumstantial evidence of beginning antiquity is desired. That is, evidences of a youth-which-is-past are accompanied by mental depression and other symptoms. The patients desire to have brushed back the heavy hand of time that they may look as young as they feel others should think they are.

The loss of a part or of an entire nose, whether due to tuberculosis, syphilis, injury or tumor, always produces a marked mental depression which is relieved only by the restoration of the missing part. A young woman was unable to obtain a position as a school teacher because of the markedly contracted scar on her face, the result of a burn in childhood. The school directors felt that the psychic influence on the pupils would not be good.

Deformities of the hands, such as webbed fingers, loss of fingers, deformed nails, scar contractions and so on, often directly impair the earning ability of the individual as well as produce a mental complex.

Hypospadias and epispadias always produce the marked psychologic effects that accompany sexual disorders, as the unfortunate ones do not know that the condition may be easily corrected. They build up facial and body attitudes which are readily recognized by those who give consideration to psychotherapy.

A dancer had low-hanging breasts which detracted from her otherwise beautiful figure. Restoring these to their normal position and rotundity removed the only imperfection of her appearance.

A husband during a tilt with his wife twitted her about a slight deformity of her nose which hitherto had been of no consequence. The defect thereafter became on obsession and she could not rest until it was corrected.

Scars and deformities following the removal of cancers and other new growths are often disfiguring, so that the patient believes he who runs may read that he has been the victim of this unfortunate condition. Removal of the disfigurements and rebuilding the lost parts by skin grafting or otherwise restores the patient's mind to normal.

Examples might be cited ad infinitum, but let these suffice. The plastic surgeon is not the only one who sees conditions which produce marked psychopathic tendencies. There is no branch of medicine that does not meet them, but very few physicians and surgeons recognize the psychologic element. Often the defect is slight physically, but its psychic influence is really serious. Every person reacts psychologically to his physical appearance. The prominent golfer ashamed of his skinny toothpick legs foregoes knickers and swimming.

The disfigurement of accidental deformities, great or small, may be minimized by plastic surgery. Attorneys, liability insurance companies and injured individuals are beginning to learn that minimum scars and lessened deformities are preferable to litigation and jury awards.

Disfigured people under the burden of their psychology are as truly sick and as much entitled to relief as any other ill individual, for there is no deformity but that it produces its pathologic psychology. To say that these people are neurasthenics means nothing, for psychologists teach "that most patients, in addition to their troubles of a more technical type, are somewhat neurasthenic."

There is no disgrace in having a defect removed any more than there is in having any other disease condition corrected. The disgrace, if any, is in allowing a manifest deformity to remain.

The ethical medical profession should encourage these mentally sick individuals that they may have their deformities removed. Patients should be informed that there is no defect but that it can be removed or at least very greatly improved by plastic surgery. Plastic surgery should be done only by those who have given the principles underlying this branch of surgery special study and who in addition possess an artistic temperament.

The removal of deformities is not a procedure which is desired merely for the sake of vanity. It is necessary for the well-being of the patients, that they may retain their good opinion of themselves, regain their ability to face the world, and remove their inferiority complex.

The appearance of an individual is important in all ranks of life. One who has a deformity is handicapped in his business and in his profession as well as in his associations. Very often his economic condition depends on his physical appearance. Your barber recognizes this when he advertises, "It pays to look well."

You might ask what has a scar to do with the obtaining of employment by an individual who is otherwise satisfactory. Let me cite my own case. Picture yourself entering the office of a plastic surgeon to have a deformity removed, and being met by the doctor's assistant who has a similar defect. The answer is obvious. All employers feel the same way and have a limit of hideousness beyond which they will not go. In other words, the individual is fit for the job, but not fit to be hired. During the late war the United States army would not accept men who were badly disfigured for the reason that the psychologic effect on other soldiers interfered with discipline.

It often happens that people who have defects which are impairing their success are unaware of the reason for their inability to progress as their mental condition deserves until they overhear some chance remark. Many of these conditions are such that, "your best friend won't tell you." Acquaintances more or less avoid the unfortunate one, and he is at a loss to account for it.

Patients come to the plastic surgeon impelled oftentimes, not so much to have the defect removed, as to have removed the cause of the disapproval they feel their associates manifest more or less hiddenly. No one will deny that a large physical defect is a major cause of disapproval. What is a large defect? A small inconsequential blemish on the other man's face takes on enormous proportions when on your own. If you doubt this ask any man who has one.

Persons who have deformities, even though slight, to which they are sensitive, isolate themselves psychologically by surrounding themselves with a mental barrier which separates them from their associates. Remove the deformity and the barrier is removed with it. Defects make the patients introspective. Their hypochondriacal fancy increases with time unless relieved, and they become a social and economic loss to the community as well as to themselves.

Remove a defect and you change a man's appearance. Changing his appearance changes the interpretation which the community makes of his character. In other words, changing a man's appearance changes his reputation. He then adjusts his character to meet his new reputation. Following removal of a deformity, friends remark on the improved appearance of the individual, but are at a loss to explain it, as usually there are no tell-tale scars to be seen.

Strange as it may seem, a patient with a corrected deformity immediately forgets the defect he had, and when shown the photographs and cast of his original condition is often surprised when he realizes that his deformity had been so great. It is, therefore, important that photographs be taken before operation in every case and that casts be made wherever possible. They also aid in planning the operative procedure.

Best results are attained when the financial and other traces of the disfigurement are removed together, for a patient who has a financial obligation to act as a constant reminder of a former deformity is not in the ideal frame of mind to derive the maximum psychologic benefit from the correction of the defect. It is necessary, therefore, to carefully appraise the complete mental reactions of every patient and to advise such individual treatment as will entirely remove the condition and its effects. The physician or surgeon who treats patients with lesions producing psychologic reactions is not giving them the maximum service, when he disregards the financial phase of the treatment.

When a patient applies to the plastic surgeon for the removal of a defect, the latter meets a physically abnormal person in a psychologically normal situation, that is, the mental condition that the individual has developed as a result of the cosmetic defect is that which would result, to a fair degree, in any normal person who has a due desire not to be disapproved on account of his physical appearance. Who is there that can single handedly stand up and appear at his best in the face of a disapproving environment? Added to this mental handicap is the increased difficulty in obtaining work, thereby reducing his ability to support himself, and we are back to the first law, self-preservation. I have said that this is a normal psychologic reaction, for any man who is in danger of being unable to satisfy his primitive needs, food, clothing and shelter, is sure to develop a psychologic reaction.

An individual with a deforming scar or other large disfigurement is conspicuous, and as he walks down the street people turn to take a second look at him. Remove the deformity and not only does his psychology change, but the expression on his face changes also. When a child receives an injury that leaves a scar, the old grandmother says, "It doesn't make so much difference, he is only a boy." The truth of the matter is, however, that it is just as horrible for a boy as for a girl.

A few patients develop typical neurosis from fear that the condition may become worse, fear of conspicuousness, fear of loss of employment, of friends, associates and social position. The depression is manifest in their general attitude and they lose the zest of living. Not rarely do they commit suicide. Their appearance weighs so heavily on their minds that they cannot tolerate it.

Ethical surgeons should treat these patients as they deserve by removing the deformity, and ethical physicians should cease to decry this type of medical attention. Plastic surgery is more than justified, and patients who have been benefited by it are more grateful than those who have been grasped from the very jaws of death.

724 Medical Arts Building.

PLASTIC SURGERY OF THE FACE *

RECENT CONTRIBUTIONS, PRESENT STATUS

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RECENT CONTRIBUTIONS

Actual priority is difficult to ascertain. Under recent contributions will be mentioned those procedures which have recently come into prominence.

Wheeler has done monumental work on lagophthalmos which is yet unpublished. This applies to all cases where the patient is unable to close the eye, as facial palsy, exophthalmos from any cause (goiter, intraorbital tumor, chloroma, Sculler's disease). If the exophthalmos is of extreme degree, two or three surgical adhesions are formed between the upper and lower lids. This leaves a narrow slit, through which the patient can see. If corneal abrasion is present, it will quickly heal underneath the adhered lids.

If the lagophthalmos is of mild or moderate degree, the lids are sutured together from the external canthus (external tarsorrhaphy) mesialward for a distance sufficient to enable the patient to close the eye. In exophthalmic goiter the cornea is observed by the slit lamp and, if there appear signs of impending disintegration, surgical treatment as outlined above is instituted. One has only to see a case of cured exophthalmic goiter with both corneae completely white and opaque following ulceration from lagophthalmos to realize the enormous importance of this contribution.

At last something real has been done for the pitiable deformity resulting from complete paralysis of one facial nerve. Long ago attempts were made to elevate the paralyzed side of face, especially the angle of mouth, with buried silk or linen sutures. Improving upon this, Blair[1] uses strips of fascia lata instead of silk or linen sutures. These are inserted by means of his special needle so that the sagging tissues are elevated and anchored to the parotid or temporal fascia. A strip of fascia lata placed beneath the lower lid corrects the lagophthalmos.

Wheeler[2] has pointed out the marked advantages of skin of upper eyelid as a free graft in repair of deficiencies of lid skin. Besides being a perfect match in color and texture it possesses the great advantage of nearly always becoming a complete take. Eyelid skin is the thinnest of the body. It has the stratified squamous corneal layer, a very thin dermis with basement membrane, no fat, and is

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*Read before Spokane County Medical Society, Spokane, Wash., Feb. 14, 1929.

applied directly to muscle. It, therefore, closely approximates a Thiersch graft and this accounts for the readiness with which it takes. Sheehan[3] advocates its use for the repair of small skin defects of the face.

Prepuce skin is very similar to eyelid skin. Free transplants will grow readily but there sometimes remains a smegma odor and for this reason its use about the face is attended with risk. The skin from the posterior surface of ear is quite thin, grows readily as a free graft, and is often useful in facial repair.

Free grafts require pressure until circulation is established. Smith[4] has found by experiment that 30 mm. of mercury is the optimal pressure. He obtains this by inserting inflatable rubber bags in the dressing.

The delayed flap and the tubed pedicle are factors for safety in the pedicled flap. The delayed flap described by Blair in 1921 is formed as follows: The flap is elevated, and after control of bleeding is sutured into its original bed. After an interval of from six days to three weeks it is again elevated and transferred to its new position. If any sloughing or infection occurs after the first elevation of flap, it is necessary to delay the flap until inflammation has subsided.

The tubed pedicle is accredited to Gillies, who used it in 1917 and is probably his greatest contribution. Two parallel incisions are made and the skin elevated between them. This is sutured raw edge to raw edge, thus forming a tube. The remaining skin defect is closed by undercutting. After inflammation has subsided a flap may be elevated at the distal end of the tube, and after using the flap, the tube is often opened along the suture line and this skin also utilized for repair.

Blair and Ivy[5] have devised a method for accurately measuring the pedicled flap for complete rhinoplasty. This flap provides a double thickness columella and a lining for the alae. The remainder of the nose is lined by hinged neighborhood flaps or by a free wolfe graft (Smith[4]).

PRESENT STATUS

The high average of good results rather than the occasional brilliant result determines the method which prevails.

As a supporting substance there are two tissues which have much to recommend them, namely, cartilage (costal, auricular, alar) and fascia (fascia lata, etc.). These have one preeminent quality in common. They will usually live, even in the presence of infection.

Costal cartilage is easily obtained and shaped. If a long piece is used which must keep its shape without bending, all perichondrium should be removed. If a short piece is to be anchored securely to bone, as in repair of the orbit, the perichondrium should be left on and this sutured to the periosteum.

Fascia lata has many uses. It may be removed in large amounts. The edge of the fascial defect may be sutured to the underlying muscle or sutures of fascia may be passed from one edge of defect to the other. With a large fascial defect there will be some herniation of the muscle but no real harm seems to result.

Bone transplant requires contact with bare bone. It then becomes adherent and fixed as costal cartilage never does. If infection occurs, it is usually lost. Combined bone and cartilage (costal) for dorsal nasal transplant is recommended by such eminent surgeons as Cohen and Carter. They are, however, greatly in the minority.

Ivory and celluloid are used as transplants. Nearly all authors condemn these materials unreservedly, but on visiting the clinics of these men one learns that they occasionally use these substances. Maliniak[6] shows that ivory has a similar chemical formula to bone and that celluloid is chemically dissimilar. Interesting but aparently of no practical importance as celluloid seems to be, it is tolerated by tissues equally as well as ivory. If the tissues are soft, pliable and without scar, either ivory or celluloid will usually heal in without reaction and if left alone remain indefinitely. The use of these substances is at times indicated.

Skin grafts: Thiersch grafts are used very little about the face. They may be used for the repair of ectropion in burn cases, as the final result of the Thiersch graft matches the scar from a burn very nicely. A take may be expected, if the supporting tissue is firm and of regular contour so that even pressure may be exerted. In less favored locations and where secretions are present, a tubed pedicled flap is often necessary.

Fat grafts are useful for filling in certain depressions. Usually fat should be removed with the underlying fascia and transplanted so that fascia is next to skin. Experience teaches that it is best to transplant fat in small amounts and repeat later if needed, rather than to transplant one large piece.

In the repair of depressed scars, excision of scar and resuturing will not completely correct the depression. Fat flaps may be buttressed beneath the skin incision or the method of Poulard[7] employed.

If considerable mucous membrane has been lost, repair is usually effected by means of a Thiersch graft. A mold of stent is made to fit the raw area and some method devised to hold it firmly in place. The Thiersch graft is applied to the stent raw surface outward and held firmly in place for two weeks.

Losses of full thickness lip, too large for natural closure, may be corrected by two pedicled flaps which should be cut with the blood supply.[4] The first is a hinged flap with the hinged pedicle at one of the edges of the defect, thus turning the skin into the mouth as lining. A second pedicled flap is used to cover all the remaining raw surface. If hair becomes troublesome on lining flap, gradual excision may be done after the method of Morestin or the area may be excised and Thiersch grafted.

The cure of keloid has not yet been found. Small doses of x-ray before and after operation, excision, resuture without tension, and the placing of horse-hair sutures without tying for lymph drainage gives high percentage of good results. Smith advises massage of the new scar with 5 per cent pyrogallic acid ointment.

One is often consulted concerning the removal of paraffin. If distinctly encapsulated, this can be removed just as any other benign tumor. If infiltration of adjacent tissues has occurred, the problem is entirely different, requiring wide excision to be replaced with transplanted tissue. The end-result in this group is often unsatisfactory.

In general terms, diseased tissue (malignancy, scar, abnormal pigmentation, etc.) must be excised and replaced at the time or later by healthy tissue. The technic used, especially about the eye, nose, ear and mouth, is too intricate to be included in this paper. One strives for the most nearly normal physiologic and cosmetic result, for the least added scarring and for the method which gives the highest average of successes.

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HYPERPARATHYROIDISM In the literature on osteomalacia, on multiple cystic tumors of bone and on parathyroid tumors, there is a clinical picture, found occasionally under all of these titles, which seems to deserve description as a separate clinical entity. The study of the case reported by David P. Barr, Harold A. Bulger and Henry H. Dixon, St. Louis (*Journal A. M. A.*, March 23, 1929), first called the author's attention to this disease. A survey of the literature revealed some remarkable and little emphasized associations: 1. Few cases of proved multiple giant cell tumors of bone have been reported in the literature. 2. It has been found by many observers that osteomalacia is associated with a negative calcium balance and increased excretion of calcium in the urine. 3. The occurrence of calcium stones and distressing urinary symptoms has been frequently reported in cases of osteomalacia. 4. There have been cases of osteomalacia and other bone diseases in which parathyroid tumors or parathyroid hyperplasia was noted at the time of autopsy. 5. A few cases of osteomalacia have been associated with muscular hypotonia and a complete inability to walk. 6. A high calcium content has been found occasionally in cases which were called osteomalacia and which were associated with multiple cystic tumors of bone. 7. Recent work on parathyroid extract has demonstrated the physiologic changes that occur when there is an excess of the parathyroid secretion. These include (a) hypercalcemia; (b) increased urinary output of calcium and negative calcium balance; (c) depletion of calcium in bone, and (d) hypotonicity of muscle. With the assembling of all the evidence, it seems justifiable to introduce the name of hyperparathyroidism and to consider under this heading the various cases as constituting a clinical entity as definite and distinct as parathyroid tetany or exophthalmic goiter. The clinical features probably are: 1. Rarefaction of bone. 2. The occurrence of multiple cystic bone tumors, several of which on pathologic examination have been found to be giant cell sarcomas. 3. Muscular weakness and hypotonia. 4. Abnormal excretion of calcium in the urine and the formation of calcium stones. 5. Abnormally high serum calcium.

TREATMENT OF NONMALIGNANT UTERINE BLEEDING BY RADIUM. James R. Linton, George A. Marks and George Van S. Smith, Boston (*Journal A. M. A.*, March 23, 1929), state that in selected cases of uterine fibroids, radium application resulted in cure in 88.2 per cent, improvement in 5.8 per cent and failure in 5.8 per cent. Of the 209 patients with uterine bleeding in the absence of any demonstrable pathologic condition, 54 per cent had had previous operations, 71.2 per cent of which had been pelvic. Sixty-eight per cent of the patients were over 35 years of age. Twenty-three per cent were girls or unmarried women. Among the married patients the percentage of sterility was low, being 8, and the fertility was higher than the average for women in general. Only 20 per cent had had abnormal menstruation (dysmenorrhea and irregular flowing) before the onset of illness. Possible factors in the etiology of abnormal flowing without demonstrable pathologic conditions are: many pregnancies, endometrioma of the uterine wall or ovary, previous pelvic operation, local or systemic endocrine dysfunction, subclinical constitutional blood disease, systemic blood disease and previous general infections. Uterine curettings do not give any microscopic clue except when they show evidence of infection. On the basis of follow-up reports, 50 per cent of which were made after five years or longer, recurrence occurred in 6.7 per cent and cures resulted in 93.3 per cent. There is a fairly definite relation between the amount of radiation and the "depressant" effect on the ovary, the factor to be considered being that younger patients require relatively slightly more dosage to produce the desired effect. No abnormal menopausal symptoms could be unquestionably attributed to the use of radium. Thirteen patients, 7.2 per cent of those traceable, had twenty pregnancies after treatment, only eight of which were normal and resulted in normal children. When the amount of relief afforded by radium is balanced against the abnormal condition of the patients before treatment and the possibility of necessary hysterectomy, the case against radium as regards pregnancy is not entirely one-sided.

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EDITORIAL

PROPRIETARY PSEUDOMEDICAL JOURNALISM

Pseudomedical literature is an active factor in the creation of a state of mind in the medical profession, receptive to newer and less proven therapeutic methods. This persistent display of proprietary publicity has become a very potent factor in the psychology behind the widespread use of these methods of doubtful benefit. It is the logical response of the drug houses to the cry of their stockholders for more dividends.

The situation is roughly this. There is the patient who needs or desires therapeutic help; there is the doctor who desires to give such help, and who needs the contingent remuneration; and there is the drug house whose mission is two fold: first, it has a high calling of service to both the doctor and his patient; second, and not less important, it must pay dividends. The first obligation is discharged by the drug house to both doctor and patient by the production of reliable products of proven therapeutic value. By the skilled use of these, combined with wise counsel, the doctor also can discharge his obligation of service to the patient. But what of the second obligation which the drug house must face. It must satisfy its clamoring stockholders. It must pay more than the sale of the "old reliables" will warrant. It must develop new lines with exclusive rights, for which it can ask very high prices. This is its economic sine qua non.

The answer to the last requirement is a flood of doubtfully worthy medicaments upon the market. Fortunately a certain critique still remains a characteristic of the profession in general. Naturally, then, physicians have turned to the literature to ascertain the value of these products. Until recently it has been a worthy tenet of scientific observers to deny mention in the literature to proprietary products; only of late, and for the most part through foreign language channels, has this commandment been broken. We have with us always the reports of the Council on Pharmacy and Chemistry, but these do not suit the popular demand for clinical observation. There is too little glamor to them. What the physician wants is a description of clinical tests, the results of the use of the agent in question upon large series of cases.

And here is the field of the pseudomedical journal. Just as the drug houses have come to realize that they must make an intermediary of the physician, if they are to succeed in selling their wares, so they are realizing that they must present the virtues of these wares in a voice which the physician is in the habit of accepting as the voice of authority. Hence the flooding of the mails with the new plague of proprietary medical journals. Gone is the blatant display of groundless assertion. Perish the thought of advertising to the laity! Today we have periodicals gotten up with the title and finish of the ethical scientific literature. The utmost subtlety of approach is used, and the accepted forms of medical writing observed with care. A uniformly favorable presentation of the firm's products is tempered with just enough pro and con to carry the illusion, but not enough con to sow even the tiniest seed of mistrust. So accustomed are we to taking at face value data coming to us through such channels, that an acute scientific intelligence is often necessary to digest this material properly. It is difficult if not well night impossible to relegate it to its appropriate category, that of clever advertising.

The writer has been stimulated to follow closely the development of this new field of drug advertising. One is fired to admiration by the astuteness of the editors. Their grasp of a certain practical sort of psychology is nothing short of striking. Yet any protracted study of their material shows the obvious defects in the stuff of the deception. There is always an extended abstract or even an original paper dealing only in a general way with the firm's products, and well enough done to foster a certain confidence. There follow abstracts of more or less general interest, interspersed with quotations or more often misquotations, representing rather more clearly the advantages of the firm's products. In a careful scrutiny we have almost never failed to note that warnings and negative data are restricted to material foreign to the sales shelves of the firm in question. The nearer the approach to the salable products of the firm, the more euphoric the writing. Only toward the back of these so-called journals do we get down to the good old fashioned testimonials from our obscure professional friends who seem so willing to sign their initials and small town addresses. It is a pity that the artistic deception should be spoiled by the appearance of our old friends, the testimonials. But they are there, like the thorn on the rose bush. They are the only palpable holdover from a bygone age of shameless medical advertising.

The inclusion of a certain amount of data not directly lauding the contents of the firm's sales shelves is attributed (by the editor) to the broad spirit of altruism which characterizes the general policies of the firm. We are told that through these pages the busy practitioner can obtain in short compass the important current scientific developments. The fact is that the majority of such periodicals carry only an ill assorted hodge-podge and scattering chatter, taken at random from ethical medical publications. The amount of time consumed by the aforesaid busy practitioner in such intellectual evasions could, if well spent, furnish him with much well grounded and valuable scientific data.

If the profession will see clearly that this vast pseudomedical literature is no more and no less than clever medical advertising, then no further commentary should be called for. Nor is it necessary to recriminate the drug firms for the use of their wits. We must remember that much that is unethical in scientific medicine is legitimate in business. We feel justified, however, in openly criticizing those physicians not ostensibly connected with drug houses who publish more or less poorly grounded favorable observations on the clinical use of such proprietaries. It is a proceeding which smacks of the testimonial on a large and more pernicious scale. It should be held in bad fetor. The writer has in hand certain pungent morsels gleaned from this large portion of his daily mail before it hits the waste basket. He hopes to publish some of them for the fair consideration if not edification of the profession in the near future. Removed from their clever setting, these gems reflect a lesser brilliance. In fact, they assume a rather pasty hue. In our editorial opinion there is in such publications some good, a very great deal mediocre and not a little bad. Thus their serious perusal becomes, if not a definite subtle undermining influence, at least a wretched waste of time.

CURE AND PREVENTION OF DEAFNESS

Otosclerosis is commonly considered by otologists as an incurable condition. Deafness from this cause is not ordinarily amenable to improvement. Recently it has been announced by the American Otological Society that an effort is to be made to raise a fund of $2,500,000 for a world-wide research into the cause, character and prevention of deafness. An immediate campaign is to be undertaken to raise $500,000 by July 1, to continue a program of research starting from a grant by the Carnegie Corporation four years ago.

It is claimed present scientific knowledge is totally inadequate for the analysis of diseased condition of the ear, and that no pathologic department exists in any hospital that can intelligently deal with microscopic analysis of temporal bone diseases causing progressive deafness. Investigators in different parts of this country and in Europe are collecting data from researches in various laboratories and hospitals which will in due time be assembled for intensive study. Wittmaack, of Hamburg, is attempting experimentally to produce otosclerosis in apes, which may aid in the solution of the problem. Aub and Crockett, of Harvard, have been treating otosclerosis with parathyroid extract and calcium diet. They believe a hopeful outlook is warranted in cases treated at the very beginning of the disease. Davenport, of the Carnegie Institution of Washington, is studying genetics of otosclerosis in families with reference to the Mendelian aspects of the inherited defect. Over two thousand hospitals throughout the country have been canvassed for autopsy material in cases which have had functional tests of hearing made before death. Advocates of this movement claim that research workers need life-long training and should have the needed financial support in order to work to the best advantage. This movement has the financial aid of a sufficient number of laymen to warrant a belief that its aims may be accomplished.

PERMANENT LIBRARY FUND

According to a state law in Oregon, the physicians pay a registration fee of five dollars each. The money realized from this source and from medical examinations and reciprocity fees leaves a balance after paying the necessary amounts for administration and enforcement of the medical practice act. Consequently there has been a sentiment among the medical profession that this unexpended sum might well be devoted to some worthy object for the benefit of the entire profession. Largely through the initiative of Dr. Ernest A. Sommer, chairman of the library committee of the medical school at Portland, a law was drafted and enacted at the recent session of the legislature, providing that forty per cent of the annual registration fees paid by physicians shall hereafter be devoted to building and maintaining a medical circulating library at the University of Oregon Medical School.

This law will make available approximately two thousand dollars annually for equipping and furnishing the medical library. The State Board of Medical Examiners is also empowered to appropriate additional funds for this purpose. The medical school library has been furnishing a searching and mailing service for physicians for some time, but the new law places this service on a permanent full-time basis. Any licensed physician of the state can secure books and periodicals through the mail by addressing a request to this effect to the librarian. The profession of Oregon is to be congratulated on the prospect of this permanent provision for supplying their needs in medical literature.

MEDICAL RESULTS FROM THE WASHINGTON LEGISLATIVE SESSION

From a medical standpoint the recent session of the Washington legislature was conspicuous for its failure to pass measures of interest to the medical profession. The Public Health League, representing the profession of the state, was active in the introduction and passage of only one bill, suggested by the American Medical Association, being a uniform law for the proper labeling of lye and other caustics. This was passed and signed by the Governor.

All bills mentioned in our last issue, introduced either in the Senate or House, were defeated or died in committee. The bill to license and widen the activities of x-ray technicians, declared vicious by radiologists and roentgenologists, was reported unfavorable by an overwhelming majority from its committee. The antivaccination-medication-inoculation bill, which would have prevented all health authorities from checking or controlling epidemic diseases, after coming up for a second reading finally died in the Rules Committee. The hospital bill, which would have extended the privilege of hospital treatment for the patients of cultists of all descriptions, failed of passage. It is stated that members of the Senate and House Committees considering this measure received thousands of letters from all sorts of irregular practitioners urging its passage. One representative received fifty telegrams one morning in its behalf. It is predicted that a concentrated and wide-spread effort will be made for the passage of such a measure at the next legislative session. Two osteopathic bills were presented, one to permit osteopaths to advertise, the other providing that whenever an act was permitted or required to be done by a physician, the same should include osteopaths. They were disposed of by indefinite postponement by the House.

A bill providing for the administration of county hospitals by boards of trustees, intended to take hospitals out of politics, passed both Senate and House but has not been signed by the Governor at this writing. The eugenic code, providing for sterilization under certain conditions, passed both legislative bodies but has been vetoed by the Governor. A Children's Code Commission was created for the purpose of studying child welfare problems and suggesting remedial measures. Although this was approved by the legislature, the Governor subsequently vetoed it. A bill was passed by both legislative branches permitting small counties to unite in construction of tuberculosis sanatoria. Although one would scarcely anticipate opposition to so harmless a measure, it fell under the Governor's veto on the ground that it would increase taxation.

OREGON MEDICAL LEGISLATION

At the recent session of the Oregon legislature there was very little in the way of enactments pertaining to medical matters. The bill which was passed, providing for funds to be applied for a medical library, is mentioned elsewhere. A bill was enacted providing a penalty of imprisonment of from one to five years, or a fine not to exceed $1000, or both such penalties, for any practitioner of the healing art, whether licensed or not, who fraudently makes any false statement regarding the physical condition of any person or who treats a person for an affliction which does not exist. A resolution was passed directing the governor to appoint a committee of nine persons to study the provisions of the Workman's Compensation Law and to recommend necessary changes. The governor has been requested to appoint a medical man on this committee in order that certain constructive proposals regarding medical provisions of the law may be presented.

An effort was made to pass a basic science act similar to the law in Washington and other states, but the bill died in the Senate Committee on Medicine, Pharmacy and Dentistry. At the March meeting of the Council of the state association it was voted to proceed with the preparation of initiative petitions to place this act on the ballot for the next general election in November, 1931. A bill was introduced requiring an examination by a licensed physician of both male and female for marriage licenses, to ascertain whether they are free from contagious or venereal diseases. Details of the required physical examination were mentioned and the fees specified for the same. This bill died in committee. Apparently the Oregon legislators had little interest in the passage of bills affecting physicians or medical practice.

IDAHO MEDICAL ENACTMENTS

Results of medical legislation in Idaho have been very gratifying to the profession, more having been accomplished at the recent legislative session than at any time during the last thirty years, since the medical practice act was passed in 1899. It is evidence of the activities of the Public Health League and medical association officials. The list of bills mentioned herewith have been enacted into laws by having passed both branches of the legislature and been signed by the governor. Unless otherwise specified they will not go into effect for sixty days after March 7.

House Bill 26 requires that all those matriculating after July 1, 1934, shall have had a two year course in a college or university teaching letters and sciences, equivalent to the standards of the University of Idaho. This was the nearest definition that could be secured from educators as to the meaning of the so-called premedic course. This law is the highest standard required by any state; it and its effects will be observed closely by other states. Already requests from seven other states have been received for copies of this law. It will mean, if followed up, that Idaho will have a single or composite examining board.

House Bill 30 strengthens the present medical practice act. It makes it unlawful for any person who is not licensed in the State of Idaho to practice any branch of the healing art or to call himself Doctor, Dr. or Professor. House Bill 31 amends the compensation law by excluding all employees "engaged in navigation of aircraft while under way." House Bill 36 is a modification of the present quarantine law. House Bill 102 provides funds for the Bureau of Child Hygiene. It specifically states that, if the Federal Government does not make an appropriation to match that of the legislature before December 31, 1929, the Bureau shall cease to exist at that time.

House Bill 116 provides that, where a license has been revoked for five years or over from nonpayment of the renewal fee, it will be necessary again to make application to the board of examiners for reinstatement. This bill was fostered by the dental profession. House Bill 121 places the Board of Eugenics under the jurisdiction of the Department of Public Welfare. House Bill 166 requires all pupils upon their first entrance to school to furnish a birth certificate. House Bill 193 provides exemption from taxation upon hospitals owned, operated and controlled by any religious or benevolent corporation or society, with the necessary grounds used therewith and from which no gain or profit can be gained by reason of their operation.

Senate Bill 45 provides that other physicians than those of the city and county can be designated by the Department of Public Welfare to examine the employees of public eating places. Senate Bill 100 is of great interest to every physician in Idaho because it raises the fee of the examiner called at insanity hearings from a $5 flat fee to "$10.00 and mileage, but in complicated cases the fee is to be set at the discretion of the Judge." Senate Bill 109 strengthens the law pertaining to collection agencies and protects the person listing accounts. It is hoped that this will be the means of correcting a great many evils that have existed in the past. Senate Bill 137 amends the medical practice act by providing a more flexible procedure for revocation of medical licenses before the Medical Board. The old law was unworkable.

The following Bills that failed of passage were of interest to physicians. House Bill 58 called for the erection of a tuberculosis hospital and an appropriation of $140,000. House Bill 83 was the old age pension bill. House Bill 314 provided a nuisance tax on the sale of tobacco. Senate Bill 53 placed the sale of glasses, lenses and frames practically in the hands of the optometrists. Senate Bill 125 attempted to amend the present law dealing with professional secrets. It provided that in the case of a damage suit, whether in the courts or before the Workman's Compensation Board, the physician would be compelled to testify. Senate Bill 164 was the well known osteopathic Bill.

THE OREGON MEETING AT LA GRANDE

The Oregon State Medical Society announces an interesting scientific and recreational program for its fifty-fifth annual session to be held at La Grande, May 16-18. A cordial invitation to attend the meeting is extended to the physicians of the Northwest and particularly to the physicians of Idaho and southeastern Washington, to whom La Grande is easily accessible. Hotel accommodations are unusual for a city of its size. Sacajawea Inn and the La Grande Hotel, two modern one-hundred-room structures, have been recently completed and afford as fine facilities as are available anywhere.

The plan of the program committee is to devote two days to the scientific program and the third day to the annual golf tournament and automobile trips to the lakes and mountains near La Grande, which are especially beautiful at that season of the year. The annual banquet will be held at the close of the scientific program on Friday. Drs. William J. Mayo and F. H. Falls will be honor guests and the Harvey film which portrays the experiments on the circulation of the blood by the early English scientists will be shown.

While the scientific program has not yet been completed, it is apparent that the meeting will be an outstanding one. The visiting speakers will be Dr. Mayo, who will speak on "The Cancer Problem," and Dr. Falls, professor of obstetrics at the University of Illinois College of Medicine, who will present a paper on the subject, "Hyperthyroidism Complicating Pregnancy."

In keeping with the policy of the society to encourage its own members to develop themselves as scientific writers and speakers, a large part of the program will be presented by Oregon physicians. At the time of going to press, the following members had signified their intention of presenting papers: W. C. Hunt of Klamath Falls, J. P. Brennan of Pendleton, C. E. Palmer of Ontario, W. T. Phy of Hot Lake, and R. E. Watkins, O. F. Akin, M. S. Rosenblatt, W. H. Bueermann, O. M. Nisbet, and J. R. Coffey of Portland. Dr. J. Christopher O'Day, formerly of Portland but now practicing in Honolulu, will also read a paper on "Viscero Palingenesis." A public educational meeting will be held on the evening of May 16, at which a number of prominent physicians will give brief talks on various phases of preventive medicine. Several motion pictures will be shown, including the firm, "The Life of Pasteur."

MEDICAL NOTES

Pan-Pacific Surgical Conference. At Honolulu, August 14-24, will be held the Pan-Pacific Surgical Conference in connection with the meeting of the Pan-Pacific Union. The objects of this surgical conference are to bring together surgeons from countries bordering on the Pacific, to promote the exchange of surgical ideas and methods, and develop an acquaintance among the surgeons meeting on a common ground. Papers will be limited to subjects pertaining to surgery, its specialties and hospital standardization. Among the general committees the general chairman for the United States and British Columbia is Dr. George W. Swift, Seattle. The program committee includes Drs. R. C. Coffey and Ralph Fenton of Portland, and H. J. Wyckoff of Seattle.

A request has been received from Dr. Ruth Alexander, chairman, Women Delegates Committee, that a special invitation is extended to all women surgeons of the Pacific Coast cities. Any of them who can possibly attend the meeting and present papers are requested to communicate with Dr. Alexander. The purpose of this notice is to excite an interest in this meeting with the hope that a goodly number may make plans for attendance.

Northwestern Neurological Society. On the afternoon and evening of March 9, physicians and surgeons interested in neurology held a meeting in Seattle, when a committee was appointed to organize the Northwestern Neurological Society. Thirteen physicians of Seattle and neighboring cities were present. A program was presented, consisting of addresses and presentation of cases representing various brain and spinal lesions. Meetings will be held every two months, and anyone interested in neurology is invited to attend.

OREGON

Recent Faculty Appointments and changes on the University of Oregon Medical School staff are as follows: Dr. Clarence J. McCusker, Clinical Professor of Obstetrics and head of the department; Dr. Raymond E. Watkins, Clinical Professor of Gynecology and head of the department; Dr. Frederic A. Kiehle, Professor of Ophthalmology and head of the department; Dr. Ralph A. Fenton, Professor of Otolaryngology and head of the department; Dr. John F. Dickson, Emeritus Professor of Ophthalmology; Dr. Lyle B. Kingery, Clinical Professor of Dermatology and head of the department; Dr. James E. Elliott King, Emeritus Professor of Dermatology. Resignation of Wilmot C. Foster, Assistant Professor of Anatomy, accepted.

University Infirmary Planned. At a meeting of the board of regents of the University of Oregon, which took place in Eugene March 16, an appropriation of $100,000 was made for the purpose of erecting a new infirmary for the students at the University. The action was taken in response to an urgent appeal on the part of students and their parents for more adequate hospital facilities on the campus.

Orthopedic Clinic Building. The University of Oregon Medical Center at Portland is to be enlarged by a new outpatient clinic building made possible by a gift from the General Education Board of the Rockefeller Foundation in the sum of $400,000. The new building is to be erected on the campus of the Medical School on Marquam Hill.

PROFESSIONAL BUILDING OPENED. The new ten-story Medical-Dental Building at Eleventh and Taylor Streets, Portland, was formally opened March 15. The latest conveniences for office practice are included in the new structure. There is also a large club room and a garage for the use of tenants.

VETERANS' HOSPITAL DEDICATED. Formal dedication of the new United States Veterans hospital on Marquam Hill, Portland, was held March 18. Among the speakers were Governor I. L. Patterson, who donated the site, and Dr. Paul Carter, medical officer in charge.

TUBERCULOSIS CONVENTION HELD. The annual convention of Oregon State Tuberculosis Association was held at Salem, Feb. 26-27. The Marion County Public Health Association and the Salem Chamber of Commerce acted as hosts to the delegates. Among the speakers were Dr. J. N. Smith, superintendent of the state institution for the feeble minded, and Dr. G. C. Bellinger, superintendent of the state tuberculosis hospital.

APPOINTED TO VETERANS' HOSPITAL. Dr. A. B. Richeson has been appointed to act in charge of duties at the United States Veterans' Hospital, Portland. He succeeds Dr. Kenneth L. Cooper who has resigned.

OBSTETRICIAN LECTURES. Dr. J. P. Greenhill, Chicago, Ill., a member of the staff of the Chicago Lying-In Hospital, was the guest of the Portland Academy of Medicine March 19, before whom he delivered an address.

DR. W. H. THOMPSON, formerly of Portland, has located for practice at Elgin.

DR. MOYT W. KERR of McMinnville has opened a part time office at Carlton. He will continue his practice at McMinnville in association with Dr. Manning.

PORTLAND CITY AND COUNTY MEDICAL SOCIETY held a meeting in the Auditorium of the Medical-Dental Building March 6. Scientific papers were read by Drs. W. B. Holden and Warren C. Hunter.

PORTLAND CITY AND COUNTY MEDICAL SOCIETY, at a meeting March 20, was addressed by Drs. Frederick Epplen of Seattle, Wash., and Goodrich C. Schauffler of Portland.

KLAMATH AND LAKE COUNTIES MEDICAL SOCIETY met at the home of Dr. L. L. Truax in Klamath Falls March 15.

CENTRAL OREGON MEDICAL ASSOCIATION held its regular meeting March 5 at the Pilot Butte Inn, Bend. Thirteen members were present. Dr. F. A. Lieuallen discussed the comparative efficiency of electrocoagulation and surgery in the removal of diseased tonsils.

POLK-YAMHILL-MARION COUNTIES MEDICAL SOCIETY met at the Gray Belle Hotel, Salem, March 5. Dr. Franklin J. Johnson of Portland was a guest of the society and spoke on "Lowering the Death Rate in Prostatectomy."

WASHINGTON

IMMIGRANTS QUARANTINED. Following the outbreak of several cases of epidemic meningitis among steerage passengers aboard the American Mail liner President Madison, those exposed to the disease were refused admission to the Port of Seattle when the ship docked March 11. Acting under orders from Dr. S. D. Fricks, director of the United States public health service for the Pacific Northwest, who held a conference with Dr. E. T. Hanley, Seattle health commissioner, the exposed passengers were transferred to the Diamond Head quarantine station near Port Townsend for observation and treatment. A similar meningitis epidemic occurred among the third class passengers of the liner President Lincoln which arrived in Seattle two weeks previously. There were several deaths among those affected.

INCOME TAX PROTESTED. Resolutions have been passed at recent meetings of the King County Medical Society and the Seattle District Dental Society, supporting the action of the local bar association in opposing the present federal tax on earned incomes. Members of the bar have pointed out the unfair advantages of capital and other unearned incomes in the matter of taxation as compared with those of the average professional man. It is proposed to initiate remedial legislation at the next session of Congress.

MENTAL HYGIENE LECTURES. Dr. George K. Pratt, assistant Medical Director of the National Committee for Mental Hygiene of New York, will deliver six lectures at Eagles' Hall, Seattle, on the evenings of April 22-30, on the subject of "The Child, His Relationships to Parent and Teacher." The titles of the lectures will be "Behavior with a Purpose," "Personality in the Making," "Mental Mechanisms in Everyday Life," "Parents are also People," "Teacher-Child Relationships," "Mental Hygiene of Normal Adolescence." Dr. Pratt is a recognized authority on mental hygiene and widely experienced in this field. He is especially interested in mental health problems of adolescent boys and girls and college students.

HOSPITAL CONSTRUCTION PLANNED. Construction is expected to commence in the near future on the $40,000 Memorial hospital at Sedro-Woolley. The new institution will accommodate thirty-two patients.

HOSPITAL ADDITION COMMENCED. Construction has been started on a new three story nurses training school for St. Elizabeth hospital at Yakima.

OFFICERS CHOSEN. Dr. E. Weldon Young of Seattle was elected chairman for the State of Washington at the recent annual regional conference of the American College of Surgeons at Vancouver, B. C. Other officers selected were: vice-chairman, Drs. N. L. Thompson of Everett and A. J. Helton of Yakima; secretary, Herbert E. Coe of Seattle; councillor, A. A. Matthews of Spokane.

INFIRMARY DIRECTOR RESIGNS. Dr. C. L. Moad of Waverly has resigned from the position of medical director of the Spokane county infirmary at Spangle, following twelve years service. The recent decision of the county commissioners to convert the infirmary into a county hospital will increase the medical duties at the institution to the point of necessitating a full time medical director.

Elected Vice-President. At a meeting of the American Association for the Study of Goiter, held at Dayton, Ohio, last month, Dr. J. Tate Mason of Seattle was elected vice-president. I tis stated that the meeting of the association for 1930 will be held in Seattle.

Physician Is Trapshooter. Dr. J. G. Lovell of Spokane was awarded a two hundred dollar prize trophy at the Arizona trapshoot which was recently held at Phoenix.

Health Investigator Appointed. Dr. Paul Preble of the United States Public Health Service has been delegated by Surgeon General H. S. Cumming to conduct a health survey of the city of Seattle. The work is expected to begin in the near future.

Dr. Russell J. McCurdy of Seattle suffered a fractured patella and injuries to his chest when his automobile collided with another machine on the Pacific Highway near Fort Lewis, March 24. His wife, who was also an occupant of the car, was fatally injured in the accident.

Dr. George H. Rue, who has been engaged in practice at Kennewick for the past eighteen months, sailed late in March for Korea, where he will serve as medical missionary.

Dr. Max S. Wright, a graduate of the University of Michigan and until recently a member of the resident staff of the Swedish Hospital of Seattle, has become associated with Dr. S. W. Holton at Sedro-Woolley.

Hospital Head Reappointed. Dr. Burton A. Burton has been reappointed superintendent of the Pierce County hospital.

Snohomish County Medical Society held its regular monthly meeting in the Medical-Dental Building at Everett, March 5. Dr. R. A. Quigley described complications of the Baldwin operation. A case of pylorspasm, with operation and subsequent recovery, was presented by Dr. H. J. Greer.

Grays Harbor Medical Society, at a meeting in Aberdeen, Feb. 20, was addressed by Dr. John Harter of Seattle, who spoke on the subject of plastic surgery of the nose.

Wedding. Dr. F. A. Bird and Mrs. La Donna LeFeber, both of Olympia, were married in that city Feb. 25.

IDAHO

Veterans' Hospital to Remain. Congressman Addison T. Smith of Idaho, during a recent visit in Boise, is reported to have made the statement that the secretary of war has definitely agreed to turn over the title of the present United States hospital property to the Veterans' hospital bureau. Heretofore the Veterans' bureau has operated under a war department permit. Plans for enlarging the hospital are being considered.

Sterilization Act Amended. The 1925 eugenics law was amended by an act which passed both houses of the state legislature March 6. The amendment prescribes the forms of sterilization operations which may be performed under the provisions of the 1925 law.

New Hospital Opened. The new building of the Western Hospital Association at Orofino was opened late in February. It is a modern, fireproof two-story structure with accommodations for thirty-five patients. Modern surgical and obstetric departments, as well as new x-ray apparatus, are included in the new building.

Dr. H. B. Stewart, who has been engaged in practice at Burley, has moved to a suburb near Kansas City, Mo.

Drs. V. C. and H. P. Belknap, of Nampa, are having a two story wooden office and clinic building erected for their use.

Dr. Douglas B. Bell of Moscow sailed in February for Honolulu, Hawaii, where he will engage in practice.

Dr. Frederick E. Barrett has located for practice at Shoshone.

Dr. R. E. Shurtz has opened an office in Buhl.

OBITUARIES

Dr. Howard Herman Quaife, Castle Rock, Wash., died at his home March 4, following a protracted illness, aged 55 years. He was born in Ionia, Iowa, in 1872, and graduaten from the school of dentistry of the University of Iowa in 1903. While acting as instructor in dentistry at his alma mater he studied medicine, receiving a diploma from the State University of Iowa Homeopathic College of Medicine in 1903. He located in Mason City, Iowa, where he remained for several years. Later he practiced at Roslyn and at Buckley, Wash. He had resided in Castle Rock since 1919, where he practiced continuously until forced by ill helath to retire last summer. Three brothers, Dr. Lawrence Quaife of Rosalia, Wash., Dr. Clarence Quaife of Galesburg, Ill., and Dr. Milo Quaife of Detroit, Mich., survive him.

Dr. James Herbert Robnett, Albany, Ore., died at the Albany hospital March 13, following an illness of several weeks duration, aged 58 years. He was born near Halsey in 1871, and graduated from the Willamette University medical department, Salem, in 1900. For nine years he was attached to the medical staff of the state asylum at Salem. He located at Albany in 1915 and practiced continuously there until his death. He was formerly mayor and had also served on the city council and the local school board.

Dr. Thomas C. Campbell, Klamath Falls, Ore., died at his home Feb. 19, following a brief illness, aged 47 years. He was born in Ontario, Canada, in 1882, and graduated from Trinity Medical College, Toronto, in 1902. He enlisted in the Canadian Army at the onset of the World War and served continuously until its close. His services were recognized by several medals of honor. He had practiced at Klamath Falls for the past ten years.

Dr. Lee Ganson, Yakima, Wash., died at his home March 4 following a long period of ill health, aged 57 years. He was born at Olathe, Kansas, in 1871, and graduated from Rush Medical College, Chicago in 1894. He was a pioneer physician of Odessa, where he practiced for eighteen years. In 1922 he moved to Yakima, where he continued in practice until the time of his last illness.

Dr. A. B. Lull, Riverside Calif., died at his home Feb. 25 at an advanced age. He was a pioneer physician of Port Angeles, Wash., and practiced until 1904 when he retired. He was a member of the Washington State Legislature in 1889, at the time the state was first admitted to the union.

Dr. James Monroe Fairley, Orofino, Ida., died March 15 at the Walter Reed hospital at Washington, D. C. He was 59 years old. He was born in 1869, and graduated from George Washington University Medical School, Washington, D. C., in the class of 1896. He had practiced at Orofino for nearly thirty years.

REPORTS OF SOCIETY MEETINGS

OREGON

JACKSON COUNTY MEDICAL SOCIETY

Pres., G. W. Gregg; Secty., E. W. Shockley

Jackson County Medical Society held a meeting at the home of Dr. W. W. P. Holt in Medford, March 6. Dr. Charles T. Sweeney read a paper on the subject of pneumonia. Dr. Meredith Beaver, a member of the staff of the Mayo Clinic, Rochester, Minn., was a guest of the society and gave a short address.

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., B. K. King; Secty., H. L. Goss

A general meeting of King County Medical Society was held in the Auditorium of the Medical-Dental Building, Seattle, March 4, with President Brien T. King in the chair. About 150 members were in attendance. Minutes of the meeting of Feb. 4 were read and approved.

Dr. Noble Wiley Jones of Portland read a paper on "The Signifiacne of Motor Disturbances of the Gastrointestinal Tract in Relation to the Problem of Chronic Cholecystitis." He discussed the mechanism of gastrointestinal motor disturbances in the light of metabolic gradents as determined by Alvarez. The significance of such disturbances was discussed in relation to the (1) diagnosis of chronic cholecystitis, (2) the segregation of the tangible surgical cases from that which may be locally controlled by diet and medical means, (3) the problem of postoperative treatment. In a series of operative cases the removal of motor disturbances was accompanied by relief in a large proportion by following the methods outlined in the paper and recognizing the true significance of the associated motor disturbances. A diagnosis proved by operation was made in over 90 per cent. The paper was discussed by Dr. George C. Miller.

Major A. M. Brailsford read a paper on "Malfunctions of the Thyroid Gland in Relation to Aviation." He found that a malfunctioning thyroid seriously interferes with the duties of the hazardous chances which the aviator is called upon to perform.

LEWIS COUNTY MEDICAL SOCIETY

Pres., W. R. Scott; Secty., Rush Banks

A regular meeting of Lewis County Medical Society was held at Centralia, Feb. 11. Dr. John H. Harter of Seattle read a paper, "Plastic Surgery of the Nose and Face." As supplemental to this a collection of lantern slides was shown.

Dr. H. V. Wurdemann of Seattle read a paper, "Cure of Crossed Eyes Without Operation." A vote of thanks was tendered Drs. Harter and Wurdemann.

On March 11, at the regular meeting of the society, Dr. Ross of Tacoma read a paper, "Venereal Diseases Debunked."

Dr. W. R. Jones of Seattle gave a talk on "Reporting Venereal Diseases."

Dr. J. T. Dowling of the Virginia Mason Clinic, Seattle, gave a short talk on "Otitis Media." Drs. Ross, Jones and Dowling were given a vote of thanks by the society.

PIERCE COUNTY MEDICAL SOCIETY

Pres., W. G. Cameron; Secty., W. B. Penney

The regular meeting of Pierce County Medical Society was held in the Washington Building, Tacoma, March 12. Vice-President Dayton in the chair.

Dr. E. A. Rich presented case reports with end-results in obstetric palsy, and entire transplantation of fibula.

Dr. Christen Quevli, Jr., presented case reports of four interesting chest conditions.

Dr. A. W. Bridge gave a paper on "A New Test for Sacroiliac Strain and Simplified Treatment," with case presentation.

The application of Dr. Roy F. Baskett for membership in the society was accepted. Applications of Drs. Frank R. Maddison and Frank C. Willson were read.

WALLA WALLA VALLEY MEDICAL SOCIETY

Pres., J. T. Rooks; Secty., C. J. Johanneson

Walla Walla Valley Medical Society held its regular monthly meeting at Marcus Whitman Hotel, Walla Walla, March 14. Nearly all members of the society were present besides doctors from La Crosse, La Grande, Pasco and Kennewick. After the dinner the program was presented.

Dr. E. J. Barnett, Spokane, gave an address on "Thymus Gland Enlargements in Infants," illustrated by radiograms taken before and after treatment. He emphasized the importance of detecting large thymus glands in children which condition frequently simulates ordinary colds.

Dr. Llye B. Kingery, Spokane, presented a paper, "Everyday Problems in Dermatology." This was illustrated by lantern slides showing various common skin diseases. There was an extended discussion on diagnosis and treatment.

Dr. A. E. Lang, Walla Walla, read a paper on "Personal Observation in Epidemic Meningitis." This was based on his experiences during the Dayton epidemic and observation of other isolated cases.

WHATCOM COUNTY MEDICAL SOCIETY

Pres., J. R. Morrison; Secty., Charles Teal

Whatcom County Medical Society met in the Herald Building assembly room at Bellingham, March 4.

Dr. J. Reid Morrison of Bellingham read a paper on the subject of "Relation of Acute Articular Rheumatism to Heart Disease." Dr. C. S. Hood of Ferndale presented a case of lymphatic leucosis with recovery.

RELATION OF THE ALTITUDE OF SUN TO ITS ANTIRACHITIC EFFECT. Frederick F. Tisdall and Alan Brown, Toronto (*Journal A. M. A.*, March 16, 1929), in reporting the relation of the altitude of the sun to its antirachitic effect conclude that a marked increase occurs in the antirachitic effect of sunshine when the sun reaches an altitude of 35 degrees or more. A study of the geographic distribution of rickets shows that rickets is uncommon or exists chiefly in a mild form in those places where the minimum seasonal altitude of the sun is not below about 35 degrees. Conversely, severe rickets is chiefly encountered in those cities where the altitude of the sun is below 35 degrees for some months of the year.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

History of Medicine, With Medical Chronology, Suggestions for Study and Bibliographic Data. By Fielding H. Garrison, M.D., Lt.-Colonel, Medical Corps, U. S. Army, Surgeon-General's Office, Washington, D. C. Fourth Edition, Revised and Enlarged. Octavo of 996 pages, with 286 portraits and other illustrations. W. B. Saunders Company, Philadelphia and London, 1929. Cloth, $12.00 net.

It is now seven years since the last edition of Colonel Garrison's History of Medicine appeared. In the present volume he has added what has happened in the intervening period in the latter chapters and in the beginning of the book, a section on medicine in prehistoric times. He feels that the postbellum period, with its gigantic literature of general biology and medicine, is a chaotic welter and will ultimately overreach itself like an inundation, or tend to selfsterilization and terminal petrifaction, and that already this period is "sad with sick leavings of the sterile sea."

The chief object of a book of this kind is not to be a repository of bald facts concerning the history of medicine but to trace the big movements and ideas that have animated the great leaders of medicine through all time, and especially to emphasize the basic thoughts latent in medical progress. The history of medicine is mainly advantageous to the student of medicine as a discipline for the mind so that he may be able to discriminate the true from the false, the temporary and pretentious from the solid and permanent in medical progress by imbibing the manners and mode of thought common to the leaders in medicine.

This book begins with a consideration of ancient and primitive medicine and continues with Egyptian, Sumerian and Oriental medicine. Then follow sections on Greek, Graeco-Roman, the Byzantine, Mohammedan and Jewish periods. Next come the medieval and rennaissance periods up to the end of the 15th century. The rest of the book pictures medicine in the 17th, 18th and 19th centuries, and the final or modern period down to the present day. During all the centuries medical history is chiefly portrayed through the lives of the leaders in medicine and by the work and ideas they bequeathed to posterity. The lives are necessarily condensed to the last degree but are not confined to bare and uninteresting facts. There are actual portraits or woodcuts of most of the modern celebrities, together with living verbal pictures of their traits and characteristics which show enormous research and an erudite and scholarly mind.

Thus, under Thomas Addison (1793-1860), Bright's colleague at Guy's, we see a man of classic features and noble mien but of so haughty and repellant a manner, concealing excessive shyness, that he never had a large practice but confined himself chiefly to lecturing on diagnosis and pathology. He often forgot to prescribe anything to his patients, so little importance did he attach to drugs, yet the Addison pill of calomel, digitalis and squill we use today. He described appendicitis in 1839 almost fifty years before the classic pathologic account of Fitz, but not much antedating that of James Jackson of Boston. In 1855 Addison gave to the world his monograph "On the Constitutional and Local Effects of Disease of the Suprarenals." This book was of epoch-making import not only because it was the first description of this fatal disease but because it inaugurated the study of diseases of the whole ductless gland system.

Indeed, when one begins reading this volume it is hard to tear oneself away. The work of one man naturally leads to that of others who have added to that of the first, and so one is unconsciously drawn into the fascinating and broadening study of the history of medicine. At the close of the book there is a comprehensive and condensed account of what the World War did to and in medicine.

Winslow.

The Vertebrae. Annals of Roentgenology, Volume Eight Roentgenologically Considered. Including a Study of Industrial Accident Cases. By Arial Wellington George, M.D., Sc.D., F.A.C.R., Sir James MacKenzie Davidson Memorial Lecturer, 1923, etc., and Ralph Davis Leonard, A.B., M.D. Edited by James T. Case, M.D. Two Hundred and Three Roentgen-ray Studies, Thirteen Clinical Illustrations and One Colored Plate. 256 pp. $10.00. Paul B. Hoeber, Inc., New York, Publishers, 1929.

This volume is replete with splendid illustrations of normal vertebrae and all types of the abnormal. It is offered to the medical profession with the underlying thought of being a greater aid in the diagnosis of cases falling under industrial acident acts of the various states and also to be of aid in medicolegal cases. All types of abnormalities are taken into consideration, classified under the first section as structural abnormalities and pathologic conditions. Under structural abnormalities congenital anomalies are considered, both spina bifida and variations in which this does not enter. The several pages devoted to the former are of importance to every one interpreting roentgen films.

The section on fractures and dislocations of vertebrae is taken up in detail. In the classification given a fourth class is established to cover a type termed Kummell's fracture. The authors give considerable space to this questionable slowly developing compression fracture on account of its importance in settling claims. Under pathologic conditions, tuberculosis, malignant new growths, benign tumors both destructive and bone productive types and the diseases of uncertain etiology are considered.

Part two, a sectional study of the vertebral column, is presented in a very complete fashion. The fifth lumbar is taken up individually. All those dealing with compensation cases appreciate the anomalies present in this region. The presentation of this subject by the authors is complete. There are sections written on the industrial back by Adams and another on the diagnosis of tuberculosis in the sacroiliac joints by Smith-Petersen which are well worth reading. An appendix is attached on medicolegal testimony which, while brief, brings out certain facts worth knowing. This volume should occupy a place in the library of all roentgenologists, orthopedists and those doing a great deal of industrial and medicolegal work.

Baumgartner.

Angina Pectoris. By Harlow Brooks, M.D. Emeritus Professor of Clinical Medicine, New York University, etc. 164 pp. 2.50. Harper & Brothers, New York and London. 1929.

This little monograph on the baffling symptom complex of angina pectoris is most timely. It serves to focus attention on a condition which is certainly on the increase. Many such cases, if discovered early, may be greatly benefited and enabled to lead a comfortable existence by re-

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maining within their narrowed cardiac limitations. The publishers are to be congratulated in selecting Dr. Brooks to write this particular monograph, as by reason of his vast experience he is eminently fitted to do so.

VON PHUL.

IMPERATIVE SURGERY. With Special Reference to Aftercare and Prognosis. By C. R. G. Forrester, M.D., F.A.C.S. Consultant, Teaching Staff, Post-Graduate School, Laboratory of Surgical Technicque, Chicago, etc. 598 Illustrations. 464 pp. $10.00. Paul B. Hoeber, Inc., New York, 1929.

This volume is gotten up in a most excellent style and is in every way worth careful reading. The illustrations are exceptionally good. There are a few fields in traumatic surgery that the author has not covered, but no book can cover everything in the field of surgery. One of the most striking points in the book is its entire freedom from "padding," a fault entirely too common with most medical writers. Every subject is handled with as few words as possible. In his efforts to be brief and to state only his own opinion, he has necessarily omitted many methods of treatment, some of the omissions coming as a sort of shock to our established ideas. For instance, in the treatment of fractures of the neck of the femur, he has failed to even mention the Whitman treatment. This omission seems to be on a par with a discussion of the treatment of syphilis without mentioning mercury. But the author is giving only his own views and own methods and is not concerned with the opinions and methods of others.

His chapter dealing with the so-called sacroiliac syndrome is most pleasing, at least to the reviewer. It is a relief to note he does not believe that the sacroiliac joint slips around like a sack of coins, necessitating frequent so-called Goldthwaite reductions. His methods of operating for the removal of the head of a fractured radius and for the repair of the anterior crucial ligament are both open to criticism. The operation on the radial head, which is spoken of as the author's method, is the only operation we have ever performed or have ever seen performed. Who originated the operation cannot be stated but, considering how many years it has been used, one can hardly believe the method original with the author. His crucial ligament operation is practically identical with that of the reviewer, whose method was fully described in *Surgery, Gynecology and Obstetrics* in July, 1927. However, this does not in any way detract from the value of the book.

His chapter on surgical interference in the treatment of fractures is well written and says much in a few words. One regrets, however, certain statements in this chapter. It is stated that, if operation is done immediately, that is, within twenty-four to thirty-six hours after the injury, "*The almost inevitable results are traumatic sloughing, osteomyelitis and bone necrosis.*" Where in the surgical world could the author have seen such appalling results? For fifteen years the reviewer has advocated the early operation of fractures, that is where operation is indicated, and has yet to see any of the results mentioned. To delay operation for ten days to two weeks is most unsound physiologically and mechanically. But all books have something to which we can object. This has fewer than most books. It is written directly to the point, is clearly stated and beautifully illustrated. It is well worth careful reading.

EIKENBARY.

PROCTOLOGY. A Treatise on the Malformations, Injuries and Diseases of the Rectum, Anus and Pelvic Colon. By Frank C. Yeomans, A.B., M.D., F.A.C.S. Professor of Proctology, New York Polytechnic Medical School, etc. With 417 Illustrations and 4 Colored Plates. 661 pp. D. Appleton and Co., New York and London, 1929.

The general impression of this treatise made upon the reviewer is that of comprehensiveness and conciseness. The endeavor to cover such a large amount of ground in a book of this size usually leads to an unbalanced work, certain subjects receiving too much attention and others too little. This volume is nicely balanced. The different new forms of treatment are given reasonable mention in each chapter, the decision being left oftentimes to the reader to decide their value by further investigation, showing a refreshing spirit of tolerance in the author. On the whole it can be considered a worthy successor to Dr. Tuttle's famous book on the same subject. The general practitioner who only desires one work on proctology we believe will make no mistake in possessing Yeoman's Proctology.

CROOKALL.

RECENT ADVANCES IN OBSTETRICS AND GYNECOLOGY. By Aleck W. Bourne, B.A., M.B., B.Ch. (Camb.), F.R.S.C. (Eng.), Obstetric Surgeon to Out-Patients, St. Mary's Hospital, etc. Second Edition, with 67 Illustrations. 382 pp. $3.50. P. Blakiston's Son and Company, Philadelphia, 1928.

This volume presents briefly certain new matters pertaining to obstetrics and gynecology. Part I deals with obstetrics, Part II with gynecology. The initial chapter deals with antenatal care. While containing little new matter, the author wishes to stress the importance of this subject. Under chemistry of the blood and urine in pregnancy all necessary tests and examinations are presented in detail. The importance of such examinations is stressed. A chapter on ovarian hormones deals with the role of oestrin and its effect is discussed at some length during pregnancy and lactation. The other hormone, corpus luteum, is considered in its various manifestations. The author believes that properly timed injections of these ovarian hormones will have a wide field in the treatment of sterility, dysmenorrhea and menorrhagia. Endometrioma, of which much has been written by Sampson, is discussed at some length. Its clinical features are presented. The treatment is purely surgical. The obstetrician and gynecologist will find this an interesting volume.

GETTING READY TO BE A MOTHER. A Little Book of Information and Advice for the Young Woman Who is Looking Forward to Motherhood. By Carolyn Conant Van Blarcom, R.N., formerly Assistant Superintendent and Instructor in Obstetric Nursing and the Care of Infants and Children at the Johns Hopkins Hospital Training School for Nurses, etc. Second Edition Revised, with Eighty-two Illustrations. 286 pp. The Macmillan Company, New York, 1929.

As indicated in the title, this volume is not intended for physicians but for instruction of the expectant mother. It is one of several books recently published advising mothers what may be done for their babies before and after birth. Part I is entitled "The Baby's Mother," Part II, "The Baby." The introductory chapter is the reproduction of a story from the Pictorial Review, "How One Baby's Mother Got Ready." This is a very readable little volume with information on a great variety of subjects.

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ORIGINAL CONTRIBUTIONS

SOME CONSIDERATIONS OF MEDIASTINAL LYMPHADENITIS *

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and
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Because of their inaccessibility to many of the ordinary methods of diagnosis and their frequent involvement in a diversity of diseased conditions, often as silent participants in the pathologic process, the mediastinal glands are worthy of a more careful study and scrutiny than has generally been given them. In extenuation of the more or less cursory investigation accorded these glands it may be said that the very nature of their location, buried, as they are, deep in the thoracic tissues and the frequent absence both of localizing and focalizing signs and symptoms have led us to pass them by as a possible cause of the constitutional manifestations with which we are dealing. When one bears in mind that the tracheobronchial group of mediastinal lymph nodes receives the lymphatics from the lungs, bronchi, lower part of the trachea and its bifurcation, and thereby often becomes infected as a result of diseases of the respiratory tract, it is easy to picture how they can harbor infection long after the original disease has disappeared and thus act as a definite focus of infection.

It is doubtful if clinicians are attaching enough importance to infections of these glands and it is certain that they are not ordinarily mentioned along with the better known foci of infection, such as the teeth, tonsils, sinuses, gallbladder and pelvic organs. On the other hand, it is surprising how often one may meet with an extensive involvement of these glands with not a single objective or subjective finding. Their position deep in the elastic and expansile thoracic box accounts to some degree for an absence of pressure symptoms and often makes physical diagnosis impossible. Impracticability of biopsy, particularly when there is no other gland available and when there is no other definite clinical finding, makes the x-ray our sole means of diagnosis. Judging from the wealth of articles in the literature, the importance of this diagnostic procedure with its attendant difficult technic has been realized by roentgenologists both in this country and abroad. De la Camp refers to it as "the most difficult field of roentgenoscopy."

Even with every x-ray facility at hand a moderately enlarged gland may fail to show, when it lies close beneath the sternal shadow or heart silhouette or is buried in the broad ligament deep in the substance of the lung. Lambert and Berry[1] state that mediastinal disease is never diagnosed by x-ray observation until the widening has extended beyond what are considered the normal anatomic borders of the mediastinum. In general it may be said roentgenography is more helpful than roent-

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*Read before the North Pacific Society of Internal Medicine, Seattle, Wash., Mar. 9, 1929.

*From the Department of Medicine, University of Oregon, and Medical Service of the Dr. Robert C. Coffey Clinic.

genoscopy in diagnosing gland masses, although the latter is indispensable where pulsation in the mass is to be ruled out. We have found that stereoscopic plates and plates taken at an oblique angle are of the greater value, particularly where one desires to show involvement of the posterior mediastinal chain. Our series contains several cases where the ordinary anteroposterior plate misled us entirely as to the extent of gland disease, and in one case showed no pathology whatever where the entire posterior chain was the site of extensive disease.

Another aid in the diagnosis of tracheobronchial lymph node enlargement is the knowledge that we may gain through direct observation by bronchoscopy and esophagoscopy. Lerche[2] stresses the importance of these methods of examination and makes a plea for a wider use of them, not only for the diagnosis but also for the treatment of tracheobronchial lymph node suppurations. Particularly is this procedure valuable in cases of pressure on a large bronchial trunk, where the offending gland lies buried in the lung substance and one is at a loss to account for the change in physical signs over a circumscribed area of the chest (fig. 1). It may also give us our differential diagnosis between primary bronchial carcinoma and stenosis due to gland pressure from without.

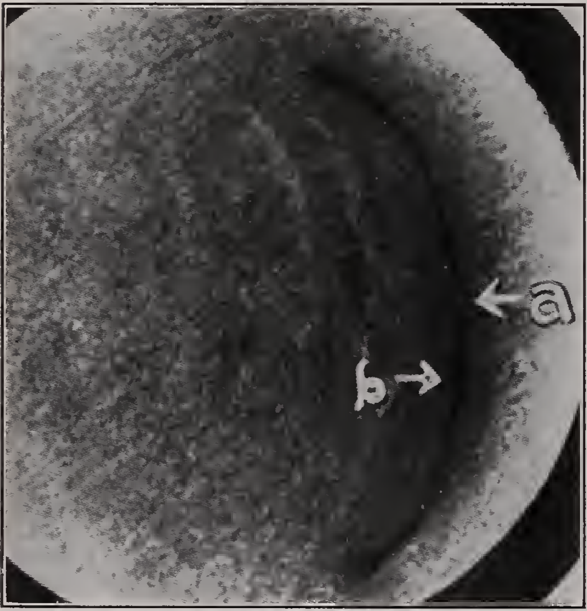

Fig. 1. Bronchoscopic view of bronchus compressed by lymph node. (Lerche, Arch. of Surg.)

Case 1. Mr. P. S., farmer, age 56. Chief complaint: difficult breathing, cough. Past history: measles, mumps. Influenza two years ago. Jaundice at 26.

Present illness: Contracted severe cold three months ago; cough has continued and he has been treated for chronic bronchitis. Must sit up in bed to breathe. More difficulty with inspiration than with expiration. Has lost weight and is weak. There has been no fever or hemoptysis. Raises sputum.

Physical examination: Negative except for following local signs. Poor aeration of right lung, upper lobe. Dulness in upper lobe anteriorly and in the right interscapular space with diminution of breath sounds. Few rales at right base posteriorly.

Clinical findings: Temperature mildly septic type. Urine negative. Sputum negative for t.b. Purulent. Contains blood, not fetid. Blood: Hgb. 80 per cent; r.b.c. 4,000,000; w.b.c. 11,000; p.m.n. 57 per cent; s.l. 37 per cent; l.l. 4 per cent; e. 2 per cent. Roentgenograms of chest, hilus and parasternal shadows increased some; tenting in left diaphragm. Right apex relatively denser than left and seems retracted. Bronchoscopy by Dr. Harry Bouvey: Passed bronchscope into right bronchus up to second bifurcation without obstruction. At this point an obstruction was encountered in the nature of a protrusion into the bronchial aperture, over which the mucous membrane was swollen and reddened. Apparently the constriction was caused by a pressure from without. No neoplasm was observed.

Course: Progressive improvement with less cough and expectoration. Gain in weight.

Discussion: Owing to the strictly localized signs of poor aeration of the right apex, a diagnosis of bronchial obstruction was made either from a growth in the bronchus or gland pressure from without. Bronchoscopy was of greatest value in this case in diagnosis and proved the latter diagnosis. Progressive improvement over a period of three months with a gradual clearing up of the local signs in the right upper lobe would seem to bear out this diagnosis. This case demonstrates a solitary involvement of a deeply buried bronchial node, following simple respiratory infection.

We have always considered the localizing symptoms of thoracic gland disease a particularly fascinating field of diagnosis, somewhat analogous to the localization of neurologic lesions by reason of the numerous nerves, blood vessels and other structures which the mediastinum houses. It is needless to reiterate the necessity of a careful search for these localizing symptoms as a part of a painstaking general examination in the diagnosis of mediastinal gland adenopathy. Where there is coexistent enlargement of superficial gland chains, a biopsy for diagnosis is often valuable but we have been struck with the frequent occurrence of a lack of confirmatory evidence by this method, particularly where a cervical gland has been excised. As is so often the case, these glands are chronically enlarged from ordinary nose, throat and head infections, and by a poor choice of specimen for excision a report of simple inflammatory adenitis may be returned where other factors have made one practically certain that he is dealing with a Hodgkin's or tuberculous adenitis in the chest.

To clarify the diagnostic points in some of the case reports to follow as well as to crystallize our ideas of this division of the lymphatics, a brief anatomic review might not be amiss. A classification of these glands into four main groups will help one greatly in his visualization of the disease processes caused by them.

According to Delamere,[3] the visceral glands of the thorax are the most numerous and comprise the following subgroups:

1. The anterior mediastinal glands. These constitute a mass of four to six glands on the anterior surface of the transverse arch of the aorta, from which mass chains of glands run towards the base of the neck. Some authors describe these chains as an intrathoracic prolongation of the deep cervical chains. This connection serves to explain the mediastinal adenitis which so frequently follows the acute febrile diseases of childhood, including erysipelas, paranasal sinus disease and the eruptive fevers.

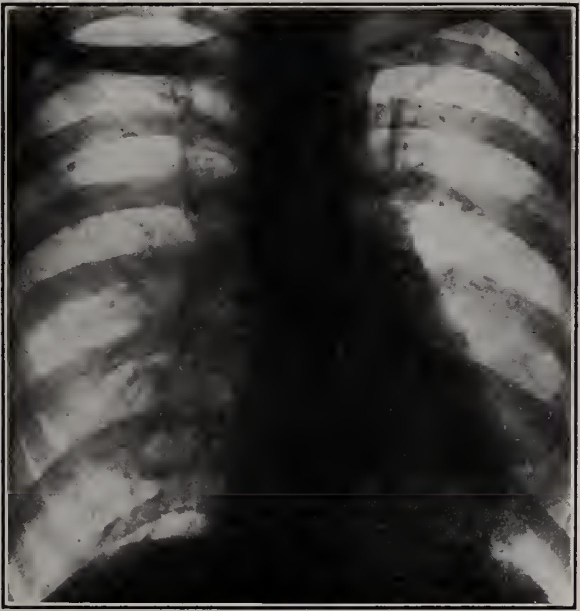

Fig. 2, Case 2: Mediastinal adenitis following influenza.

Case 2. H. B., male, age 6.

Chief complaint: Wheezing, asthmatic attacks, frequent colds.

Family history: Negative.

Past history: At the age of three months mother noticed that the child wheezed and she thought he had asthma. He has always had hard breathing, most marked after hard play or after taking cold, to which he has always been most susceptible. In the past two months he has had four attacks at night in which he sits up in bed, gasps for breath, becomes cyanotic and coughs until he vomits. There are no other symptoms.

Physical examination: A well nourished child with cyanosis and difficult breathing. The left ear is draining pus and the tonsils are septic. Chest-dulness to the right and left of the manubrium sterni, more to the left. Right side moves less than the left and on this side all breath and voice sounds are diminished throughout. There is very marked dulness in both interscapular spaces opposite the hilus of each lung.

Clinical findings: Blood: Hgb. 93 per cent; r.b.c. 5,000,000; w.b.c. 9600; p.m.n. 73 per cent; s.l. 27 per cent; temperature 98.6°, pulse 100, respiration 20. Urine negative. Sputum negative. Wassermann negative. Roentgenogram of both antrums shows heavy clouding; of chest shows hilus shadows of both sides enlarged and of unusual density. Lung fields clear. No evidence of tuberculosis.

Course in hospital: Tonsils were removed and both antrums operated on. Following these procedures patient has had no spells of dyspnea and was discharged improved.

Diagnosis: Simple inflammatory mediastinal lymph adenitis secondary to antrum and tonsil sepsis (fig. 2).

Case 3. G. G., male, age 60.

Complaint: Pain in right side of chest.

Past History: Cholecystectomy followed by phlebitis.

Present illness: Patient had influenza in November, 1928. In December emergency prostatectomy was done. About fourteen days after the operation he had pain in chest, fever, cough, sputum and sweats.

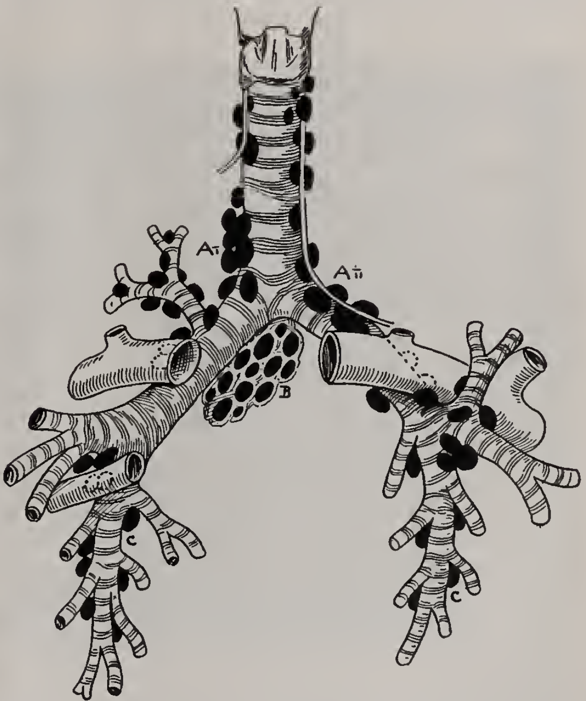

Fig. 3. From "Corning Topographic Anatomies," showing right and left, AI and AII, pretracheal-bronchial glands, intertracheal-bronchial glands B, and interbronchial glands C.

Physical examination: Showed dulness in right interscapular space, extending well out into the middle lobe of the lung with many crepitant and moist rales and diminished breath sounds.

Clinical findings: Sputum negative for tuberculosis. W.b.c. 12,000, with 75 per cent p.m.n., s.l. 25 per cent. Urine negative. Roentgenogram showed a dense mediastinal shadow on the right with some enlargement also in the left hilus. Septic temperature to 102.5°. The right antrum was full of pus.

Course in hospital: Following treatment of antrum disease temperature rapidly came to normal, cough and expectoration lessened and the mediastinal and lung condition subsided.

Diagnosis: Mediastinal lymph adenitis secondary to antrum disease.

As a general rule, pressure symptoms involving the great vessels with a development of the collateral circulation and venous hum at the base of the neck, when the head is retracted, point to adenitis of this anterior chain. Too, these glands are the most frequent site of mediastinal abscess with those of group 2 (fig. 3).

2. The right and left pretracheobronchial glands and the intertracheobronchial glands. The first of these lies in the angle of the trachea and the right bronchus, and comprises four or five large glands which are constant in their arrangement. The second group lies in the angle of the trachea and the left bronchus and comprises three or four smaller glands. The intertracheobronchial glands are in the angle of the bifurcation of the trachea. There are ten or twelve of these of good size. The interbronchial glands occupy the angles of division of the large bronchi and according to Cruveilhier may be found even in the division of the fourth order. They are buried in the lung parenchyma. These are the nodes that cause bronchial stenosis and do not show in the ordinary x-ray picture. It is the enlargement of these nodes, where the bronchoscope may give us our diagnosis by showing us a bronchus obstructed from without.

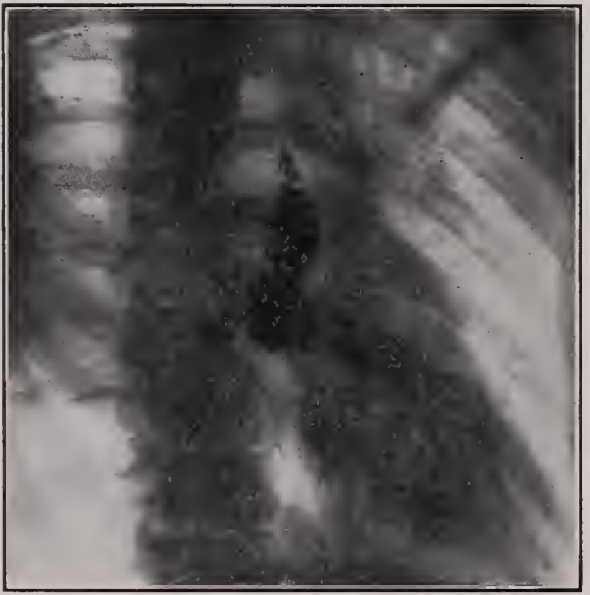

Fig. 4, Case 4. Oblique view showing posterior mediastinal glands.

3. The posterior mediastinal glands are scattered around the esophagus behind the pericardium, and rarely there are two or three small retroesophageal glands situated by the side of the thoracic duct.

Case 4. C. A. M., male, age 41.

Complaint: Gas distress after eating.

Past history: Typhoid, erysipelas, influenza. Otherwise unimportant.

Present illness: Uneasy feeling throughout the head and neck for five or six years, secondary to indigestion and gas distress. Has definite epigastric discomfort after meals, relieved by soda which in turn relieves the discomfort in his neck. Has obstinate constipation.

Physical examination: Entirely negative except for tenderness over gallbladder and marked over the appendix. Gas distention of stomach and colon. X-ray-Graham Cole test, no gallbladder filling. Stomach negative. Roentgenogram of chest shows several large calcified glands in posterior mediastinum, first observed by fluoroscopy on examination of stomach. Lungs negative.

Diagnosis: Extreme enlargement of these glands caused no symptoms, although they lie in the posterior mediastinum. They were shown as an incidental finding by diagonal fluoroscopy of the chest. A straight anterior plate of the chest in this case shows nothing, whereas a diagonal plate reveals the pathology (fig. 4).

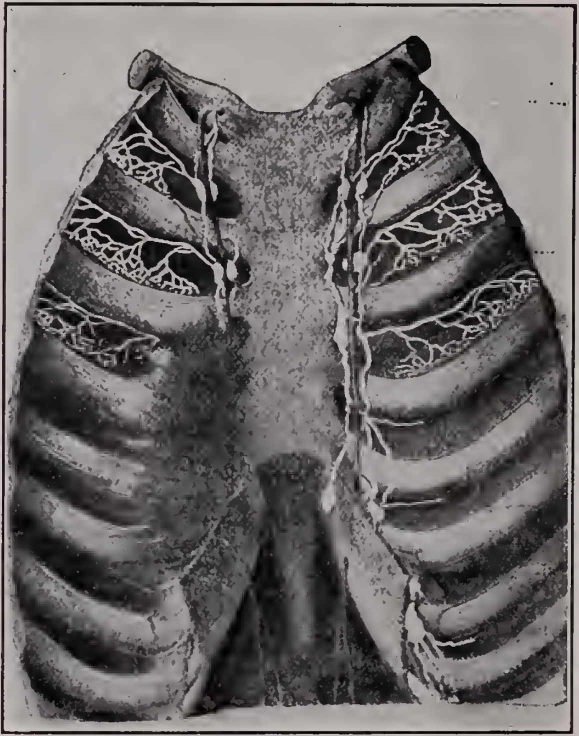

Fig. 5. Internal mammary lymph glands from Delamere text, "The Lymphatics."

4. The internal mammary lymph glands lie in the anterior mediastinal content and are four or five in number on each side, one in the first, second, third and fifth or sixth spaces. The number is greater in infancy and less in old age with no characteristic variation in the female. These glands are remote from the pleura, being separated from it by the fat containing internal mammary vessels, the costosternal fascia and a thin layer of fat. Their afferent branches drain the inner third of the breast. On account of their remoteness from the pleura they are readily accessible to operation without undue risk to the pleura (fig. 5).

Case 5. Mrs. G. W. W., housewife, age 35.

Chief complaint: Abscess in right breast.

Family history: Negative.

Past history: Negative.

Present illness: Off and on for the past seven years abscess has appeared in the right breast which sometimes opens by itself and which occasionally must be lanced and drained. In either event it would drain about three months and then close up, only to recur after any illness or run down condition.

Physical examination: Shows a tuberculosis sinus of the chest wall, multiple and with old scarring. There is one area of fluctuation beneath the right breast. The inner portion of the right breast tissue has been replaced by scar tissue.

Clinical findings: Blood, urine, Wassermann tests negative. Roentgenogram of chest shows old fibrous tuberculosis. Hilus shadows increased. Much calcification of costal cartilages.

Operative findings: Second and third ribs involved in a tuberculous process near their sternal attachments. The tissues beneath these ribs were necrotic but the pleura under each rib showed clear, moist, smooth and glistening, showing no underlying involvement.

Discussion: This was a tuberculosis infection of the anterior mammary mediastinal glands, involving also the ribs and the subcostal tissues. The case demonstrates the anatomic remoteness of these glands from the pleura and their accessibility to operation without undue risk to the pleura.

The practical significance of these glands lies in the fact that they may be involved in carcinoma of the breast and in tuberculosis of the rib and rib cartilages. Handley[4] explored these glands in five cases of carcinoma of the breast and found metastasis in the glands in one case. In 1898 Halstead mentioned the advisability of removing the anterior mediastinal gland content for recurrent carcinoma but most surgeons do not advocate this operation because of the small chance of metastasis into the glands.

5. Included in the lymphatics of the anterior mediastinum are those of the heart. Delamere[3] states that the heart is the only circulatory apparatus which contains lymphatic vessels and these are exclusively in the myocardium at the peripheral part of the muscle in two layers, one subendocardial and one subpericardial. These are gathered into a left or anterior collecting trunk and a right or posterior collecting trunk, both of which empty into one of the intertracheobronchial glands. If there is a true leutic myocarditis or gumma of the heart muscle, it is conceivable that these glands would show a sympathetic adenitis (fig. 6).

There has always been a great variance in opinions as to the glands into which the lymph vessels drain from the heart and as to the disposition of the main collecting vessels themselves. This is especially important in cases of bacterial infections of the heart. The most recent work along this line has been done by Shore,[5] who studied the lymphatic drainage in sheep and rabbit hearts, the latter after the production of experimental infective endocarditis. He found a certain location of lymph nodes in these animals, and then searched for them in the human heart where he found them in analogous locations. He describes two glands, one between the superior vena cava and ascending aorta which he calls the caval gland of the heart, and a second one which lies by the left inferior pulmonary vein outside the pericardium which he calls the auricular gland of the heart. In three cases of bacterial endocarditis he found both glands enlarged. These glands in close proximity to those of the bronchial system, from which they are distinguished by the fact that the bronchial glands are deeply pigmented.

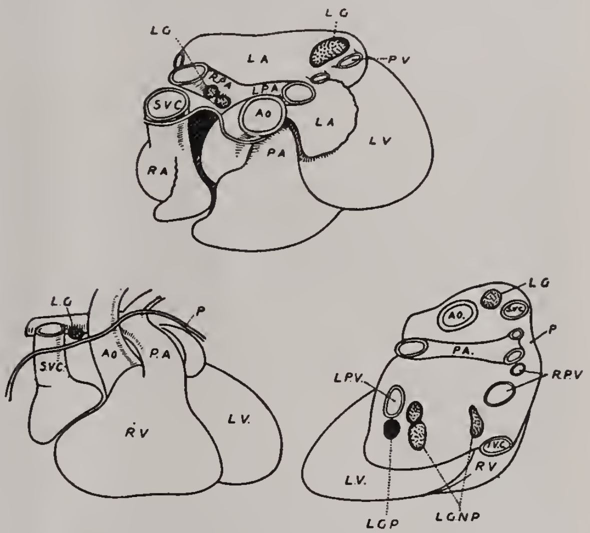

Fig. 6. L. G. caval gland of heart. L. G. P. auricular gland of heart. (After Shore Journal of Anatomy.)

Another work on the anatomic relations of the mediastinal lymphatic tissue was done by Lambert and Berry,[1] more from the standpoint of investigating the paths by which infection might extend from a mediastinal focus. These two investigators used injections of turpentine (3 parts), ether (15 parts) and Prussian blue (2 parts) into the superior mediastinal space of cadavers and proved their logic of embryonic relationship. The staining fluid was followed in its course and showed very definite directions. They found that these injections spread along definite paths consistent with the embryologic development of this region of the body, namely, into the fascial planes of the neck, into the broad ligaments of the lung, into the subvisceral pleural space, into the space about the larger branches of the bronchial tree, into the extraparietal spaces and into the retroperitoneal space through the opening in the diaphragm for the esophagus, aorta, thoracic duct, azygos veins and splanchnic nerves, inasmuch as they all spring from the original mesenchymal mass in the embryo (fig. 7).

By far the commonest causes of mediastinal lymph adenitis, especially in children, are the ordinary acute inflammatory respiratory diseases, such as the influenza epidemic through which we have just passed. The original disease is healed but there remains a residual gland inflammation with cough, low grade fever and a loss of weight.

Case 6. A. L., musician, male, age 19.

Complaint: Fever, cough, sweats.

Family history: Unimportant.

Past history: Unimportant.

Present illness: Contracted influenza during the epidemic and has now been ill for one week. In spite of the fact that his headache, backache, prostration and sore throat have disappeared, he still shows a high fever of a septic type with drenching sweats and chills. He has a very mild cough with no expectoration and complains of difficulty in breathing.

Physical examination: Patient looks toxic and emaciated. Temperature 102°, pulse 90, respiration 20. No positive findings except in the chest. The heart is negative. Anteriorly both lungs are clear. In the right interscapular space posteriorly from the spine of the scapula to the angle there is a marked dulness. Over this area the breath sounds are harsh and rasping but there are no rales and no changes in voice sounds. There is a bronchophonic transmission of the voice through the fifth and sixth thoracic vertebrae.

Clinical findings: Roentgenogram showed a marked increase in the hilus shadow on the right, probably due to enlarged lymph nodes.

Clinical course: Gradual disappearance of physical signs and cough and subsidence of fever.

Discussion: This case demonstrates mediastinal lymph adenitis of the tracheobronchial group following tracheitis and bronchitis. It is quite likely that roentgenograms of influenza cases, particularly where fever and cough persist, would show a very frequent persistence of this focus of infection.

Because the majority of these patients are treated in the home and because physical examination of the chest is most often negative, x-ray examinations are not made unless extreme pressure symptoms give us a clew as to what is taking place. In four cases with persistent cough and absence of physical signs, the roentgenogram showed appreciable enlargement of these glands.

One is then often beset with the very difficult problem of differentiating between simple mediastinal lymph adenitis and primary tuberculous lymph adenitis. This latter diagnosis is not easy to make and is too little considered because the disease may run an asymptomatic course with slight or absent pulmonary findings. It is thought that the infection takes place most commonly as a lymphogenous spread secondary to a focus in the region tributary to the gland chain. There is, however, a primary nodal infection described, the bacilli either passing through the lungs without exciting a lesion there or they are brought to the nodes through the thoracic duct.

Jousset believes that, in coexistent tuberculosis of the lung and pulmonary glands, the process begins in the glands, whereas Parrot thought that the lung was the primary focus. Leroux's statistics show that in a series of 5000 cases of tuberculosis in children between the ages of one and fifteen, over one-third showed the mediastinal glands to be tuberculous, although the lungs were not involved, judging by the x-ray findings. It has even been stated[6] that the entrance of tubercle bacilli into the lymph in any part of the body may cause bronchial lymph node tuberculosis. For instance, bacilli may pass through the intestinal mucosa without producing local pathology, reach the thoracic duct, traverse the lungs without involving them and then be filtered out by the bronchial nodes, there to produce gland tuberculosis.

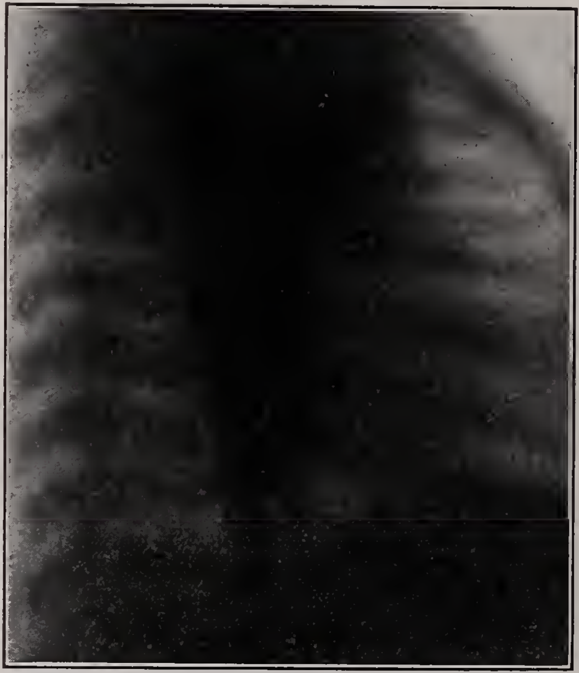
Fig. 7. Lateral view of injection mass showing passage through the diaphragm. (After Lambert & Berry).

In the differential diagnosis of mediastinal gland tuberculosis Warnecke[7] lays special stress upon the following signs and symptoms: (1) A lymphatic diathesis with repeated catarrhal infections of the respiratory tract and marked swelling of the mucosa due to exudation in the neighborhood of the glands. (2) The "gland or barking cough," occurring in paroxysms. (3) Impaired parasternal resonance particularly on the right at the level of the second and third rib with corresponding dulness in the interscapular space. Also a dulness to percussion over the fifth and sixth dorsal vertebrae. Percussion is the most important aid in the diagnosing of bronchial gland tuberculosis. (4) A bronchial type of breathing with sharpened inspiration and prolonged expiration, due to bronchial compression by the swollen glands. (5) Bronchophonic transmission of the voice through the fifth and sixth thoracic vertebrae in adults, due to the resonance of the swollen glands against the trachea and bronchi (d'Espine). (6) The occurrence of marginal pleuritides of an adhesive nature. According to Grober the bronchial lymph glands are to be regarded as a portal of entry of tuberculous pleural infection as well as the supraclavicular lymph nodes. (7) A relative lymphocytosis increased by injection of a minimal amount of tuberculin. (8) Toxic albuminuria. (9) The x-ray findings which may not only show up the enlarged glands but also adhesive pleuritides due to subpleural foci of Ghon.

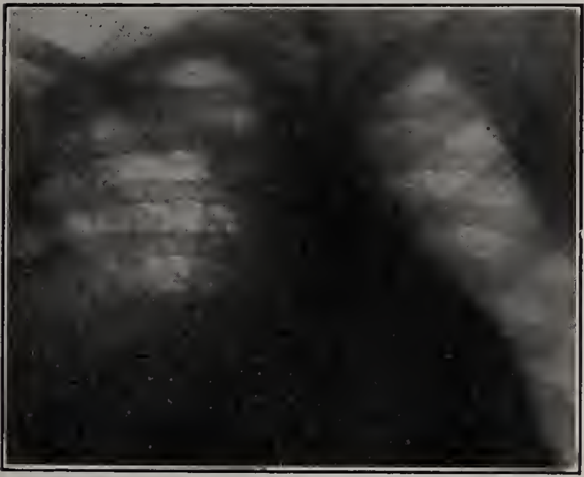

Fig. 8, Case 7. Tuberculous mediastinitis and pericarditis and pleural effusion.

Recently Friedman and Hawes[8] measured the vital capacity in two hundred children at the preventorium of the Boston Tuberculosis Association with a view to determining whether or not this test is of value in the diagnosis of tracheobronchial gland tuberculosis. Each of these children showed a positive von Pirquet test and gave a history of exposure to an open case. Twenty-eight showed definite clinical and roentgen signs of enlarged tracheobronchial glands but showed a normal vital capacity. They concluded that the test is of no value in the diagnosis of quiescent hilum tuberculosis.

The prognosis is uncertain in manifest tuberculosis of the bronchial glands, as we may expect at any time a dissemination of the bacilli by the blood or lymph stream.

Case 7. A. C. B., male, age 24.

Chief complaint: Swelling of abdomen, legs and scrotum. Weakness and general malaise.

Family history: Negative.

Past history: Mumps, tonsillitis, measles, grippe, tonsillectomy. Discharging right ear ten years ago. Otherwise negative.

Present illness: Began with hemoptysis thirteen months ago, night sweats, loss of weight and fever in the evenings. Ten months ago he developed a productive cough and pain in the lower back. Six months ago he had influenza which left him bedridden. He developed fluid in his chest which was removed, a quart of clear liquid being obtained. Shortly afterward he showed signs of pericardial effusion and this also was tapped with the removal of several ounces of clear fluid. Following this he was better but transfusion was necessary on account of anemia. His liver began to swell and two months ago he developed fluid in the abdomen and edema of the legs and scrotum.

Physical examination: Thin, pale, oral sepsis. Right chest shows signs of pleural effusion extending up to the spine of the scapula with a thickened pleura above. The left upper front shows flatness as far as the third rib and extending about one inch and a half to the left of the left border of the sternum. Posteriorly, dulness in left interscapular space. Over this area of dulness one hears exaggerated rasping breath and voice sounds with an occasional rale in the left upper front. Heart-signs of pericardial effusion and thickening. Embryonic rhythm-sounds distant and faint. Liver enlarged four fingers below the border of the ribs, smooth and tender. Spleen enlarged. Moderate ascites, edema of scrotum, penis and legs.

Clinical findings: Urine negative. Blood shows leucocytosis. Wassermann negative. Sputum negative. Blood pressure 105/90. 4900 c.c. of fluid removed from abdomen. Patient runs low grade fever. Pulse 120, respiration 30. He complains of pain in upper part of chest particularly when he coughs. Roentgenogram shows fluid in right chest, enlarged mediastinal glands.

Diagnosis: Tuberculous mediastinal lymph adenitis, produced by direct extension of tuberculous pericarditis. Ascites and edema due to myocardial weakness (fig. 8).

Clinical course: Became progressively worse. Exitus from cardiac failure.

Autopsy: Tuberculous mediastinitis and pericarditis, myocarditis, anasarca.

Discussion: This was thought to be a primary bronchial lymph node tuberculosis, involving later the entire mediastinum and pericardium.

Case 8. J. D. F., age 51, state police officer.

Chief complaint: Shortness of breath, wheezing.

Family history: Negative.

Past History: Unimportant.

Present illness: This patient worked in the lead and silver mines for ten years. Five years ago he began to be short of breath on exertion and the following winter he developed cough and expectoration with loss of weight and strength. At this time an x-ray plate showed a shadow on the right lung. He has improved somewhat lately. Outside of some dizziness there have been no other symptoms.

Physical examination: Practically negative with the exception of chest findings. There was a large area of substernal dulness below the manubrium extending 3 c.m. to the right and this corresponds to a large area of dulness, behind which involves the entire interscapular area on both sides as far down as the sixth rib. Both lungs, harsh inspiration and prolonged expiration. No rales. Increased whispered fremitus and dulness at left apex.

Clinical findings: Sputum negative for tuberculosis. Blood, w.b.c. 8500; normal differential count; r.b.c. 4,800,000; Hgb. 95 per cent. Blood pressure 138/90. Urine negative. Wassermann negative. Roentgenogram of chest shows gland masses in anterior and posterior mediastinal spaces. Diffuse fibrosis upper lobe of left lung.

Diagnosis: Pulmonary and bronchial lymph node tuberculosis.

The following cases are cited to show other pathologic processes that often affect this gland chain and for which one must be on the lookout in a consideration of disease elsewhere in the body. Examination of the mediastinum is of particular import where radical surgical cure is to be undertaken in malignancy, for metastasis in these glands materially alters the prognosis.

Case 9. C. E. W., female, age 53.

Chief complaint: Frequency of urination.

Family history: Unimportant.

Past history: Entirely negative except that one year ago several small tumors were removed from the bladder by fulguration.

Present illness: Patient first noticed blood in the urine about one and one-half years ago. Cystoscopy revealed tumors which were fulgurated several times. There has been no great amount of bleeding since but there is poor control of urine. She has lost weight. She now complains, in addition, of vague pains deep in the chest like neuralgia. These pains seem to originate in the chest and cannot be definitely localized. They radiate up and down the spine and anteriorly over the chest. They are worse on deep inspiration.

Physical examination: Entirely negative for findings of any importance.

Clinical findings: Urine negative. Blood: Hgb. 85 per cent R.b.c. 4,200,000; w.b.c. 6,000; p.m.n. 54 per cent, s.l. 44 per cent. Cystoscopy showed carcinoma of bladder with very extensive involvement along the course of the right ureter. Stereoscopic roentgenograms of chest show a dense nodular shadow in the posterior mediastinum just anterior to the spine, probably a lymph gland metastasis.

Diagnosis: Carcinomatous gland of posterior mediastinum, secondary to carcinoma of the bladder.

Discussion: The pains through the lumbar regions could be explained by metastic involvement of the retroperitoneal chain inasmuch as the spine itself showed no involvement. The spread could have occurred through the diaphragmatic aperture into the posterior mediastinum.

Case 10. Mr. S., age 60.

This patient has had a chronic cough and dyspnea for sixteen years which has made an invalid of him. There has been very little expectoration, no hemoptysis, fever, chills or sweats. No symptoms other than this.

Physical examination: Shows an emaciated man having frequent severe paroxysms of coughing which make him cyanosed but which are unproductive. The only positive findings are in the chest which show flatness in the upper left lobe anteriorly, dulness in the upper right lobe and flatness in both interscapular spaces. The breathing in both lungs is harsh and rasping with prolonged expiration.

Clinical findings: All negative except for roentgenogram which shows a large tumor mass in direct anteroposterior plate. Oblique plate shows extensive involvement of the posterior mediastinum tissue, most likely metastatic.

Discussion: One was at a loss to account for the bilateral bronchial compression until oblique roentgenography showed mediastinal gland involvement. This was missed in the direct plate (fig. 9).

Case 11. C. R., male, age 66.

Chief complaint: Pains in chest, back and hips.

Family history: Unimportant.

Past history: Unimportant.

Present illness: For the past six months has had frequency of urination with hesitancy and dribbling. Some dysuria. In addition has suffered extreme pain over the sacral region, lower spine, hip bones, ribs, jaw and top of head. Is unable to walk and has lost weight. For past four months he has been short of breath and has developed a cough with spells of asthmatic breathing.

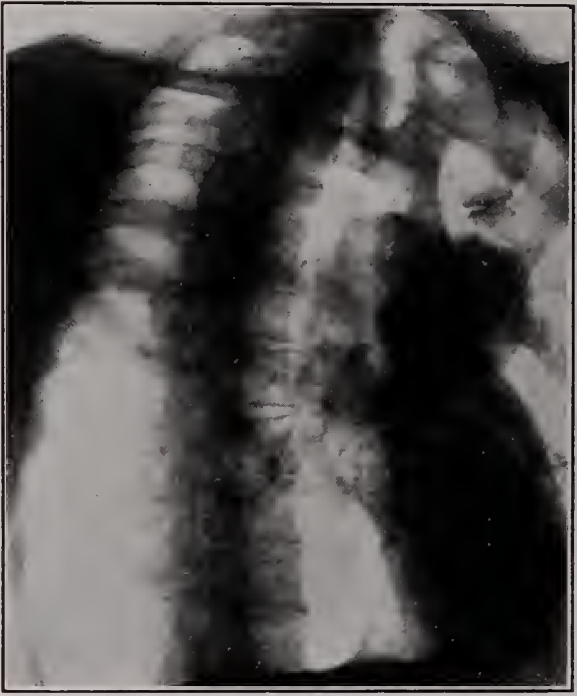

Fig. 9, Case 10. Oblique plate showing gland involvement in posterior mediastinum.

Physical examination: Senility, arteriosclerosis, emaciation, murmur of mitral regurgitation. Extremely tender spots in skull, left maxilla, lower ribs on both sides, spine and crest of ilium and dorsolumbar spine. Chest: There is a marked dulness of both interscapular spaces throughout bronchophonic transmission of whispered voice as low as the fifth and sixth dorsal spines; harsh rasping breathing throughout both lungs. Hard nodular prostate.

Clinical findings: Blood, urine, Wassermann test all negative. Roentgenogram shows diffuse hilus shadows on both sides, most likely a metastatic new growth. Numerous bone metastases in the ribs, spine and hip bones.

Diagnosis: Primary carcinoma of prostate. Metastases to bone and mediastinal lymph glands (fig. 10).

Careful fluoroscopy of the posterior mediastinal content is valuable in these cases, as it is in this chain that metastases are most apt to occur from pelvic growths.

In this study we are frequently amazed at the size these glands might attain with absolutely quiescent and asymptomatic existence.

Case 12. Dr. H. M. F., male, age 62.

Chief complaint: Constant dull ache below the left rib.

Family history: Entirely negative.

Past history: Typhoid at 20. Septic sore throat two years age. Tonsillectomy.

Present illness: For the past week he has had a constant dull ache just below the last rib on the left side which is worse on deep inspiration or on motion. The pain seems to be below the diaphragm. One and one-half months ago he noticed some reddened edematous spots on both ankles with swelling. No other symptoms of any kind whatever. No loss of weight.

Physical examination: There are no superficial nodes palpable. Lungs: On whole right side there are signs of bronchial pressure on the large trunks, i.e., coarse rasping inspiration heard throughout with a diminution in resonance and transmitted voice sounds. At the right apex there are showers of rales on inspiration, indicating an acute inflammatory process. Marked dulness at the right apex anteriorly below the clavicle and a marked area of flatness in the right interscapular space corresponding to the right hilus. Heart negative. Abdomen: The spleen is felt four fingers below the free border of the ribs, sharp, smooth and tender. Perisplenitis present, corresponding to area of pain of which he complains. All other findings negative.

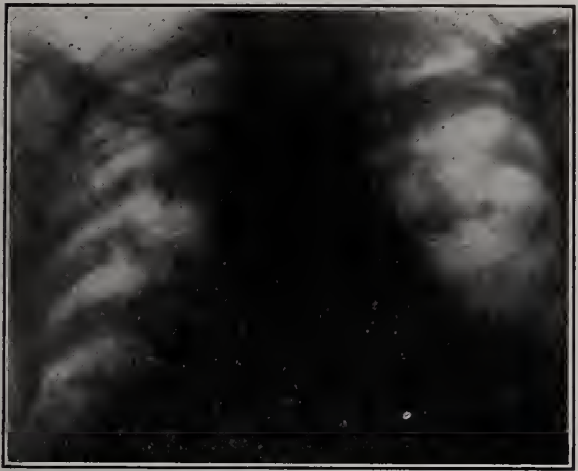

Fig. 10, Case 11. Metastatic carcinomatous glands of mediastinum secondary to carcinoma of prostate. Shows also metastases to ribs.

Clinical findings: Blood pressure 154/100. Temperature normal, pulse 90. W.b.c. 22,000; Hgb. 100 per cent; p.m.n. 97 per cent; r.b.c. 5,000,000. Wassermann negative. Renal function normal. Blood culture negative. Roentgenogram of chest, dense clouding of right hilus and upper lobe. Large masses to the right suggestive of mediastinal glands. Much fibrous in upper right lobe pulling heart and trachea to the right. Right lower lobe compressed. Left lung shows some peribronchial thickening and heavy hilus shading. Skull plates negative, sinuses negative, teeth negative.

Diagnosis: Erythema nodosum, perisplenitis, chronic fibrous tuberculosis or mediastinal Hodgkin's or a combination of the two conditions.

Discussion: The roentgenogram in this case shows a typical picture of a mediastinal Hodgkin's or tuberculosis, a feebly convex composite mass made up of several smaller parts and extending all the way from the clavicle to the heart. The findings in the lungs with coexistent erythema nodosum speak for tuberculosis. The absence of subjective symptoms, blood count and large spleen speak for Hodgkin's, although the possibility of an amyloid spleen is to be considered.

Case 13. W. N. N., male, lumberman, age 37.

Chief complaint: Lameness and soreness in muscles.

Family history: Entirely negative.

Past history: Acute rheumatic fever, two attacks. Measles, influenza in 1918.

Present illness: The patient has had for the past year a lameness and soreness of his muscles. The pain shifts frequently and responds usually to external treatment. He is unable to bend quickly and the pain often comes suddenly in various parts of the body. There has been no swelling or soreness of the joints. He has had many head colds with an occasional cough. He has lost weight, eleven pounds. At times he has been confined to his bed on account of these pains. Otherwise there have been no other symptoms.

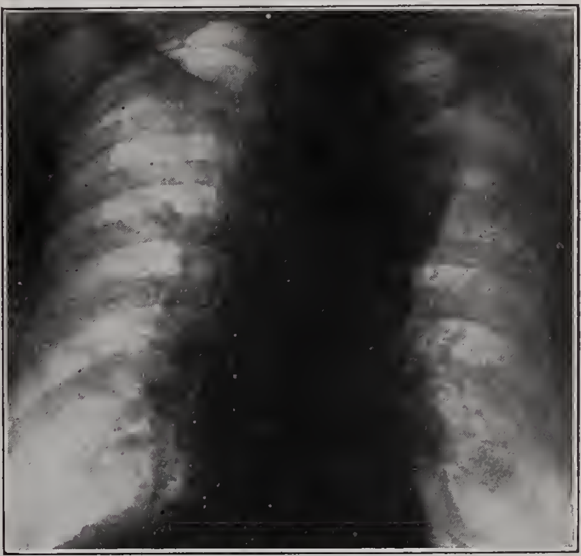

Fig. 11, Case 13. Mediastinal Hodgkin's disease.

Physical examination: Typical castrate facies with pigmentation, wrinkling and prematurely senile appearance. He shows feminine abdominal contour with small frame and long arms. Septic tonsils. Left axilla shows a large mass made up of discrete glands. Heart negative. Lungs: There is dulness under the manubrium, extending both to the left and to the right for an inch and a half. Posteriorly there is dulness throughout the entire interscapular space. Throughout both lungs there is prolonged coarse inspiration of a rasping nature. Right base posteriorly shows many moist rales on inspiration. Genitalia are underdeveloped and the prostate juvenile.

Clinical findings: Roentgenogram of chest shows a heavy shadow extending upward from the heart which appears to be continuous with the pericardium and quite sharply outlined. This extends into the apex on both sides. There are very heavy hilus shadows and marked peribronchial thickening in the right lower lobe. Urine negative. R.b.c. 4,000,000; w.b.c. 12,000; p.m.n. 78 per cent; l.l. 2 per cent; e. 1 per cent. Hgb. 97 per cent. Blood pressure 120/70. Wassermann negative. Biopsy of gland and axilla shows Hodgkin's disease.

Diagnosis: Mediastinal Hodgkin's, hypogonadism (fig. 11).

Discussion: This patient showed a severe involvement of the mediastinal glands and demonstrates to what degree enlargement of these glands may go without producing subjective symptoms.

There seems to be no relationship between the size of the glands and the amount of discomfort they may produce. A small gland in the posterior mediastinum may be the cause of an intractable intercostal neuralgia, whereas a mass five times its size in a similar location may be entirely symptomless.

The mediastinum may be invaded by leukemic pathology and this localization may then be the major cause of the patient's discomfort, producing bronchial constriction or circulatory embarrassment by pressure on the larger vessels.

Case 14. E. L., laborer, age 57.
Chief complaint: Vomiting, pain in stomach, asthma.
Family history: Unimportant.
Past history: Unimportant.

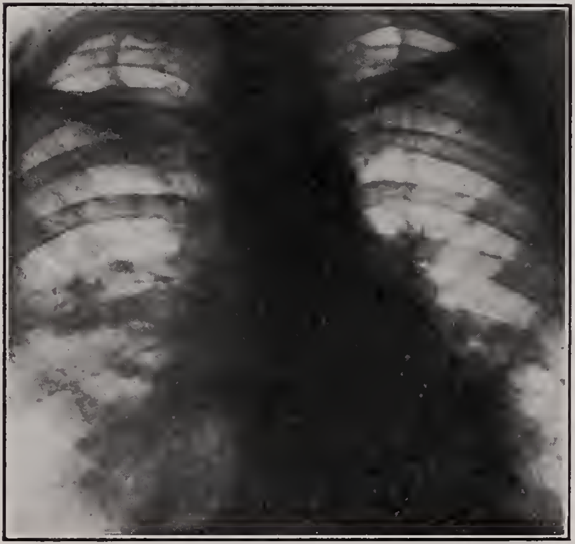

Fig. 12, Case 14. Chronic lymphatic leukemia with involvement of mediastinal glands.

Present illness: Has been in hospital twice complaining of vomiting, pains in the stomach, weakness in the shoulder, smothering over the heart, shortness of breath and painful lumps under the arms. He has had frequent asthmatic attacks.

Physical examination: Enlargement of all the superficial lymph glands and nodules in the skin. Left tonsil tremendously enlarged. Cardiac enlargement with ectopic beats and poor quality sounds. Arteriosclerosis, pallor. Liver and spleen enlarged to three fingers below the free border of the ribs, firm and tender. Chest: There is dulness in the left interscapular space and also at left posterior base. The left side moves less than the right and the breathing throughout the left chest is hard and rasping, bronchovesicular in type. Coarse rhonchi are heard over the entire lung and can be felt on inspiration. The right side shows vesicular breathing throughout.

Clinical findings: R.b.c. 3,750,000; w.b.c. 50,000; Hgb. 85 per cent; p.m.n. 5 per cent; s.l. 95 per cent. Urine and Wassermann negative. Biopsy of cervical glands showed chronic lymphatic leukemia. Roentgenogram showed considerable increase in peribronchial shadows and density noted in the mediastinum, possibly from glandular enlargement.

Discussion: This case demonstrates a mediastinal gland involvement as part of a leukemic process. The bronchial pressure was responsible for the patient's so-called asthma and produced a severe dyspnea (fig. 12).

Of less frequent occurrence but similar local symptomatology is lymphosarcomatosis of the mediastinal glands. Our series contains one such case, where the mediastinal mass was part of a malignancy which had rapidly involved the entire lymphoid tissue of the body.

Case 15. Z. Y., male, farmer, age 65.
Chief complaint: Gas, bloating and distention.
Family history: Unimportant.
Past history: Entirely negative for acute illness or surgical operations.

Present illness: He has noticed for the past month that he is continually distended. His heart beats rapidly and gas seems to press up against it. He is short of breath upon exertion. For the past seven months he has noticed that his left eye has been pushing forward and is quite far out beyond the right eye. The past few days there has been a hemorrhage visible in the sclera. Otherwise entirely negative.

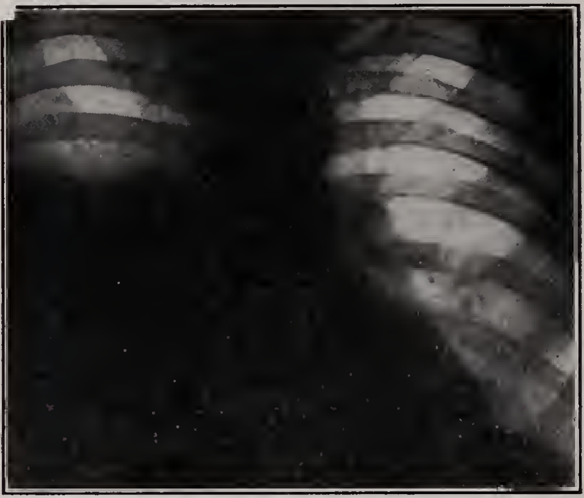

Fig. 13, Case 15. Pleural effusion. Lymphosarcomatosis involving mediastinal glands.

Physical examination: Emaciation. Left eye very prominent, protruding out almost even with the bridge of the nose. Subconjunctival hemorrhage and hemorrhage into the upper and lower lids. Right tonsil is tremendously enlarged. The cervical, axillary, inguinal and epitrochlear glands are all enlarged, firm and discrete. There are one or two nodules in the skin of the neck. Signs of fluid at the right base. Abnormal mediastinal dulness to both sides of the sternum. In the abdomen there is a large mass just below the umbilicus which protrudes up and is firm and gives the impression of springing from deep down in the abdominal cavity. It apparently is connected to no one organ.

Clinical findings: rine negative. Blood, Hgb. 85 per cent; r.b.c. 4,450,000; w.b.c. 7,800; p.m.n. 52 per cent; e. o.;

s.l. 46 per cent; l.m. 2 per cent. Wassermann negative. Roentgenogram shows fluid in right chest, mediastinal gland mass, colon negative, stomach negative. Gallbladder shows no filling. Fundus examination, no choked disc, veins and arteries normal in size, no marked evidence of sclerosis of vessels.

Diagnosis: Most likely lymphosarcomatosis, springing from retroperitoneal glands and involving all the lymphoid tissues. Mediastinal lymphosarcoma (fig. 13).

Simple mediastinal adenitis may occasionally act as a focus of infection and as such merits our attention, when searching for an etiology for various constitutional symptoms.

Case 16. B. C. M., mechanic, age 41.

Chief complaint: Shortness of breath, pain upper chest, pain in both feet.

Family history: Negative.

Past history: Frequent tonsillitis. Tonsillectomy seven years ago. Whooping cough, measles, mumps, influenza three weeks ago.

Present illness: Following the influenza three weeks ago has lost weight and strength and has an upset stomach. He has lost 25 pounds. A few days ago he began to have severe pain across the upper part of the chest with increasing shortness of breath. There has been pain in both feet, especially in the ball of the right foot and extending back to the heel. There is no swelling with this pain. For the past few days patient has had severe headaches and vague rheumatic pain in the left shoulder.

Physical examination: Temperature 101°. Blood pressure 120/88. Pulse 110. Enlarged axillary and epitrochlear glands. Head and neck negative. Heart rapid, otherwise negative. Lungs: Throughout both lungs anteriorly and posteriorly the breath sounds are faint and distant. There are no rales. There is increased substernal dulness, extending from the manubrium down to the xyphoid juncture more marked on the right, where it extends 4 cm. out from the right sternal border. On the left it fuses with the cardiac dulness. Posteriorly there is a lack of resonance in the entire interscapular space on both sides. The soles of both feet are tender to the touch. Tenderness in left shoulder.

Clinical findings: The urine shows albumin and pus cells. Wassermann negative. Hgb. 100 per cent; r.b.c. 4,980,000; w.b.c. 16,000; p.m.n. 78 per cent; s. l. 22 per cent. Roentgenogram of chest: A great increase in hilus shadows on both sides, extending well out into the lung substance, most marked on the left side and corresponding to dulness found on percussion.

Course in hospital: After a few days rest in bed with expectorants, stimulants and counter irritation, temperature and pulse came to normal. There was a marked diminution in the dulness beneath the sternum. The arthritis and myalgia disappeared. Discharged cured.

Diagnosis: Mediastinal adenitis following influenza.

Discussion: In many cases of influenza the mediastinal glands of the tracheobronchial group are infected and act as a focus after the original disease has been cured. In this case they were the etiology of a mild symptomatic arthritis.

It is our firm conviction that many of the sequelae of such respiratory epidemics as we have just experienced throughout the country are due to the persistence of the original infection in the mediastinal lymph glands that drain the inflamed trachea, larynx, paranasal sinuses and bronchi. The extreme lassitude, asthenia, myalgias, low grade fever, nonproductive cough, mental depression, digestive disturbances and cardiac arrhythmias might well be accounted for in this way. It behooves us, therefore, to give these glands our most careful consideration in a study of all our respiratory infections not only from a standpoint of diagnosis but also for treatment and prognosis.

Summary. A brief review of certain anatomic factors concerning the mediastinal nodes has been given, with case reports to illustrate these factors. The importance of oblique roentgenography, stereoscopic plates and bronchoscopy for diagnosis has been stressed. Cases described show that these glands may act as a focus of infection, that they are a frequent site of metastases in pelvic tumors and that tremendous enlargements may exist with no subjective symptoms.

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Anoxemia in Pneumonia. Arthur E. Guedel, Los Angeles, Will Shimer and John M. Cunningham, Indianapolis (*Journal A. M. A.*, April 6, 1929), assert that the common error in the application of oxygen in pneumonia has been the delay in waiting for the full development of an anoxemic acidosis with dyspnea, cyanosis and a failing heart before beginning its administration. Oxygen to be of value in pneumonia must be applied early. The time to begin oxygen in pneumonia is as soon as its application will reduce the heart or respiratory rate or will provide increased rest and comfort for the patient. An atmosphere containing from 30 to 50 per cent of oxygen is adequate to eliminate the anoxemic factor in pneumonia. It should be administered as nearly constantly as possible until well after the crisis or until its removal does not produce any sign of anoxemia. The tension or dose is regulated to meet the increased metabolic requirements and the reduced pulmonary absorption activity in each case. When the application of oxygen is begun, the patient should be assured that it is not a method of last resort but a rational therapeutic measure, whether the condition is serious or not. Oxygen therapy in pneumonia to the abolition of anoxemia accomplishes the following: It provides a higher oxygen saturation of the blood and thus lessens the heart load. It supports the functions of waste combustion and cell nutrition. It supports the aerobic stage of muscle work (reconversion of lactic acid into dextrose) and thus conserves food resources.

TOXIC ADENOMA AND GRAVES' DISEASE*

Comments Based Upon a Series of 11,000 Goiter Cases

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The prevalent confusion in diagnosis and management of Graves' disease is due largely to the use of the terms exophthalmic goiter, hyperthryroidism, toxic adenoma, toxic goiter and thyrotoxicosis as synonyms. Since neither exophthalmos nor goiter is imperative in diagnosis, the term exophthalmic goiter should become obsolete. Toxic adenoma or hyperthyroidism relates to thyroid toxicity, superimposed upon an oldstanding adenomatous thyroid and the synonyms toxic goiter and thyrotoxicosis here are valid. Such a patient is not a sufferer from Graves' disease. In other words, Graves' disease is not hyperthyroidism.

Graves' syndrome occurs in one who is rather insusceptible to goiter *per se,* appearing as a constitutional condition in a person whose family history is replete with data pointing to varying manifestations of neuroendocrine imbalance. In clear thyroid intoxication (toxic adenoma, hyperthyroidism, toxic goiter or thyrotoxicosis) it is the thyroid that makes the body ill. In the condition erroneously termed exophthalmic goiter, but which we shall hereafter term Graves disease, we are dealing with a constitutional condition or neuroendocrine imbalance, in which it is the body that makes the thyroid ill. The past and current error is the confusion of cause with effect, and no amount of hasty and facile generalizations will assist the problem out of chaos into diagnostic and therapeutic order.

That there exist many points of similarity between toxic adenoma and Graves' disease is true and may be accepted on the same basis that all fevers present such features in common, as weakness, rapid pulse, increased oxidation and loss in weight. The fact that in both toxic adenoma and Graves' disease there exist loss in weight, nervousness, palpitation, tachycardia, trembling, fatigability and an increased basal metabolic rate is insufficient ground for the assumption of Graham[1] and others that the two conditions are different manifestations of the same disease. The terms "secondary Basedow" and Basedowified goiter," employed up to approximately fifteen or twenty years ago, hinted at differentiation between toxic adenoma and Graves' disease, and not long ago Plummer[2] clearly pointed out that the two are different conditions. In our series of approximately 11,000 cases we have been able to differentiate the two conditions on the basis of the following twenty clinical points.

1. THE FAMILY HISTORY

Since toxic adenoma is true goiter, it follows that these patients frequently present a history of goiter in the family. In our series at least 30 per cent revealed the presence of one or more additional cases of simple or toxic goiter in blood relatives. There is no significant family or personal history of nervousness.

The family history of patients with Graves' disease affords information *not* of goiter, but nervousness, diabetes mellitus, Graves' disease, occasionally angioneurotic edema, and other conditions indicating neuroendocrine imbalance. Other common features are lability of heart action and a tendency to unusual cerebration. Stupidity, mediocrity and phlegmatism seem good immunizing agencies against Graves' disease.

2. AGE OF THE PATIENT

Since thyroid adenoma is uncommon before the age of twenty, and the average time required for an adenoma to become toxic is fifteen years, it follows that the average sufferer from toxic adenoma is at least thirty-five. While exceptions in endemic regions and as a result of iodine and thyroid extract drugging may be cited, this age rule is incontestable.

Graves' disease does not depend for its development upon a previously existing goiter; it may occur at any age, the average patient being from ten to fifteen years younger than is the average sufferer from toxic adenoma. The disease is common during puberty and adolescence, and may even occur during kindergarten age.

3. PREDISPOSING CAUSE

In toxic adenoma the predisposing cause of the hyperthyroidism is the oldstanding adenoma. The very term indicates the imperative existence of a thyroid neoplasm as the basis of the symptoms.

The predisposing cause of Graves' disease is not goiter but the inherent constitutional makeup of the individual in which heredity plays a part. As pointed out elsewhere[3,4], susceptibility to the disease is possessed by a type of humanity, presenting as lifelong characteristics such earmarks as heightened cerebration with emotional instability, lability of heart's action, vasomotor ataxia resulting in dermographia, hyperidrosis, increased surface heat and brilliant eyes. The predisposing "soil" may, therefore, be said to reside in congenital, occasionally acquired characteristics of body and mind.

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*From the Bram Goiter Institute, Upland, Pa.

4. THE EXCITING CAUSE

The cause of the assumption of toxicity by a goiter hitherto simple is still a matter of speculation. Two views appear plausible. The first explains the hyperthyroidism on the grounds that the thyroid structure behind the goiter, irritated by the overlying mass, becomes hyperactive.. The second is to the effect that, because of the thyroid structure behind the goiter becoming atrophied and functionless through pressure of the overlying mass, the goiter itself undertakes the manufacture of thyroid hormone, and in so doing happens to secrete an excess. Both views may be correct, the one prevailing in one case, the other in another, and in a third class of patients possibly both causes prevailing in combination. The symptoms of toxic adenoma are identical with the hyperthyroidism following the indiscriminate ingestion of thyroid substance or thyroxin. One thing is certain. The symptoms of toxic adenoma are not engendered through psychic trauma as the exciting cause.

Since in Graves' disease goiter does not precede the development of symptoms nor is thyroid enlargement imperative in the diagnosis, the exciting cause does not apear to be thyroidal. The symptoms of Graves' disease appear to originate in the nervous system, following almost invariably the incidence of a psychic trauma. In the type of individual aforementioned, accidents or near accidents, intense anticipation, apprehension, anxiety, grief, worry, any factor which can directly or indirectly bring suddenly and intensely to the fore the mechanism backing the instinct of self preservation, serves as the torch inciting the conflagration of Graves' syndrome. Aside from the rare case where an individual presenting the earmarks of susceptibility to Graves' disease develops the syndrome through the ingestion of thyroid extract, this substance has not been known to engender this disease.

5. DURATION OF ONSET

Unless there has been drugging with iodine, thyroid extract or thyroxin, the superimposition of toxicity upon an oldstanding simple goiter is rather insidious. In the average patient the full development of symptoms requires from one to two years. There is a gradual appearance of dyspnea, slight trembling and poor appetite. Within two or three months there is a noticeable loss in weight. Soon the trembling becomes more apparent, the heart action impetuous and hurried, there is further diminution in appetite, and fatigue becomes a major complaint. Within six months there may be sufficient complaints to cause the patient to seek medical attention. In many, however, medical attention is not sought for a year or thereabouts, when the loss in weight exceeds fifteen or twenty pounds, and palpitation, fatigability, trembling, nervousness and insomnia are more marked. The diagnosis of toxic adenoma is now clear. At this time the average basal metabolic rate is plus 25 to plus 50 per cent.

In the average patient with Graves' disease the fully developed syndrome asserts itself within from a few weeks to six months after the incidence of the common exciting cause, a psychic trauma. Since Graves' disease is mimicked by more ailments than is any other malady in medicine, the diagnosis, in the absence of exophthalmos and goiter, may be deferred for a considerable time. The trembling, emotionalism, restlessness, changes in behavior, sweating, fatigue, palpitation, incapacity for work, rapid loss in weight despite a splendid appetite, insomnia, and an undue sensation of warmth become intensified within eight to twelve weeks in sufficient degree to clarify the diagnosis. Brilliancy of the eyes and swelling of the neck, occurring in the average case, expedite an early diagnosis. A metabolic study at this time in the usual patient reveals a rate of from plus 30 to plus 60 per cent.

6. PRESENCE AND DURATION OF GOITER

In the sufferer from toxic adenoma goiter was present from ten to twenty years before the development of constitutional symptoms. The thyroid tumor may have originated as a hypertrophic or colloid swelling incident to puberty, adolescence or pregnancy. Neglect of adequate treatment or hope of spontaneous recovery resulted in permanent establishment of goiter and in cystic or adenomatous changes. The patient now presents a cosmetic problem, unless, of course, pressure symptoms from substernal extension of the mass occur. Years may pass without complaints other than the *appearance* of the neck. Then, following approximately fifteen years of harmlessness the goiter gives rise to symptoms of hyperthyroidism, which in a year or two develop into typical toxic adenoma.

The symptoms of Graves' disease do not depend upon a preexisting goiter; indeed, goiter is often absent, and when present develops after constitutional symptoms appear. Apparent exceptions to this rule can be explained. A sufferer from simple adenoma may develop Graves' disease as an incident, there being no relationship between the previous goiter and the present symptoms. This is a rare happening and is responsible for the confusion in differentiation between toxic adenoma and Graves' disease. Also this explains why in rare instances toxic adenoma may be associated with exophthalmos, excitability and the characteristics of Graves' syndrome. Under the circumstances we are dealing with two distinct conditions of the thyroid gland, (a) the former simple or toxic adenoma; and (b) the superimposed independent thyroid hyperplasia incidental to Graves' disease. The two conditions are no more related than are the rash of measles and that caused by a preexisting eczema, happening to occur in the same individual at the same time. Discrimination depends upon the maturity and experience of the clinician.

7. PHYSICAL SIGNS OVER THE THYROID

Since toxic adenoma is neoplastic, its blood supply is not excessive. Hence there is no throbbing, thrill or bruit. The mass is not symmetrical as a rule, occupying now the isthmus, now the right lobe, again the left. Occasionally the entire thyroid is involved. The adenoma may be merely the size of a grape or a plum or it may be enormous, approaching the size of a cantaloupe or even a melon. When much or nearly all of it is intrathoracically located, pressure symptoms arise. The mass is usually nodular and noncompressible. There is no difference in physical signs over an adenoma to indicate the presence or absence of toxicity.

In Graves' disease there may be no thyroid enlargement whatsoever. The average case presents thyroid swelling due to hyperplasia with marked increase in vascularity. Hence throbbing, thrill and bruit are usually present. The bruit may be systolic or diastolic in time or both. The sound heard may resemble that observable over an aneurism or over an apical valvular lesion. In the absence of thyroid enlargement or in the presence of iodine medication, bruit, which is pathognomonic, may be difficult to elicit or absent[5]. The size of the thyroid is rarely sufficient to occasion pressure symptoms, unless while under the indiscriminate use of iodine, when it may quickly become doubled in size. Generally, this organ in Graves' disease is no larger than is the average thyroid swelling observable in the adolescent girl, and in contour it is just as symmetrical. In short-necked persons the thyroid may become substernal but pressure symptoms are uncommon. Therefore, the dyspnea commonly complained of is not of mechanical origin but due to heart hurry and increased oxidation characterizing the symptomatology. Briefly, vascularity, symmetry of shape, moderation in size, throbbing, thrill and bruit, characterize the thyroid swelling in Graves' disease.

8. THE EYES

There are no pathognomonic eye symptoms in toxic adenoma. The expression or physiognomy is never that of fright. Rarely when an intrathoracically located thyroid tumor gives rise to marked circulatory and respiratory embarrassment, the dyspnea may result in staring eyes, much as is observed during an attack of severe asthma, asphyxia or hanging. This is not due to thyroid toxicity and is commonly associated with so-called mechanical goiter heart. When true exophthalmos and commonly associated eye signs occur during the course of a simple or toxic adenoma, it is an evidence of the superimposition of an unrelated Graves' disease.

In Graves' disease the eyes usually present characteristic signs associated with the features or physiognomy of chronic fright. Even in the minority of cases without exophthalmos there is almost always discernible a perfect or imperfect von Graefe sign. Exophthalmos varies from a slight stare to such protrusion as would endanger the eyeball. It may be unilateral or bilateral, symmetrical or asymmetrical. Associated with proptosis are the von Graefe, Dalrymple, Moebius, Stellwag and a number of other eye signs. A degree of swelling of the eyelids nearly always accompanies exophthalmos.

9. THE TACHYCARDIA

In toxic adenoma the heart hurry is not troublesome until months have elapsed The average heart rate is 100 to 110 per minute, although it may reach 140 or more in unusual cases. Under the influence of sleep and digitalis a tangible reduction in rate is occasionally observed.

In Graves' disease the heart rate is sped up within several weeks to almost its highest. Within two or three months following a psychic trauma a formerly normal heart may reach a rate of 160 to 200 per minute, the average being 130 to 140. The rate is not tangibly influenced by sleep or digitalis. Indeed, I have seen instances in which the taking of a teaspoonful of tincture of digitalis, t. i. d., increased the rate because of gastric disturbances.

10. THE BLOOD PRESSURE

Since subjects of toxic adenoma have had simple goiter with a tendency to subthyroidism for years, and since they are usually of middle or past middle age, hypertension and myocardial degeneration are commonly observed. While the average patient presents a systolic pressure of 150 mm., in many the pressure is 190, 200 and even higher. In some the symptoms of hypertension appear to dominate the clinical picture.

In Graves' disease hypotension is common. The constitutional trend in these families is toward circulatory lability, sympatheticotomia and hypotension. The average sufferer from Graves' disease presents a systolic pressure of 110 to 120 mm.; a pressure of 100 in an adult is not uncommon. The marked fatigability in Graves' disease may be attributed in part to this factor.

11. THE TREMOR

While toxic adenoma usually presents tremor of the outstretched fingers, there are many exceptions in which scarcely any tremor is discernible. When present, it is somewhat coarser than is common in Graves' disease, and at times cannot be differentiated from the tremor of senility and hypertension. There is little or no general sense of tremulousness of the entire body so common to Graves' disease, nor is speech tremulous or otherwise changed.

In Graves' disease tremor of the outstretched fingers and toes is pathognomonic. It is of the fine "intention" type. Choreiform movements are also common in very active cases. A general sense of tremulousness is frequently a bitter complaint. Speech is often high pitched, tremulous or stridulous and hasty.

12. THE WEIGHT

In toxic adenoma a loss in weight of 10, 20, or 30 pounds requires in the average case a period of months and occasionally years. This loss is usually associated with deficient appetite and constipation.

In Graves' disease the loss in weight is rapid. A loss of 30, 40, or even 50 pounds or more may occur within three or four months. A formerly obese individual may lose one-half the body weight within from six months to a year. Rapid loss in weight occurs in association with a ravenous appetite, a good food intake and frequently distressing diarrhea. These gastrointestinal phenomena constitute an important point in differentiation.

13. FATIGABILITY

In toxic adenoma weakness of the quadriceps muscles and general fatigability do not constitute the major complaints. While weakness occurs as the result of heart hurry and loss in weight, it is not out of proportion with these apparent causes.

In Graves' disease weakness of the quadriceps and other muscles is constant and often the first complaint. Indeed, many patients, particularly males, experience a sudden giving way of the legs which results in falling to the ground as though paralyzed. Despite this, an apparent paradox occurs, when these patients insist that they are feeling quite well and strong.

14. THE SKIN

The skin texture in patients with toxic adenoma does not differ markedly from the normal. Hyperidrosis is neither common nor intense. Dermographia is often absent, and when present is mild and atypical. There is no discernible aura of heat about the patient.

The skin in Graves' disease is soft, thin and moist, and the doctor's handshake reveals a characteristic clamminess of the patient's palm. Sweating is occasionally the outstanding complaint and at times is so marked as to require several changings of bed-linen daily. Dermographia is pathognomonic; it is associated with flushed skin and capillary pulse and depends upon vasomotor imbalance. It may assert itself as a red line alone, or a red line with white borders, or a white line with red borders, or a white line alone. It varies in time of appearance after the finger is drawn across the skin and in the time of its disappearance. Occasionally dermographia is raised above the surrounding skin into a sort of urticarial elevation. An aura of heat about these patients is tangible.

15. THE MENTALITY

In toxic adenoma the mentality presents no typical changes, and the history of the individual is not characterized by a lifelong nervous disposition. On the contrary, the constitutional makeup may have been more or less phlegmatic prior to the onset of toxicity, as is commonly observed in the presence of simple goiter. Toxicity is not associated with characteristic changes in behavior. Extreme emotionalism is uncommon and insanity occurs no oftener than in other individuals taken by and large.

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In Graves' disease the mentality is typical. The history reveals as lifelong traits such features as excitability, emotionalism and temper on the one hand, and a keen mentality with unduly ambitious tendencies on the other. Now, in the presence of Graves' disease, these trends are decidedly accentuated. There is a speeding up of thought and action, and emotionalism with outbursts of inexplicable lacrimation and changes in general behavior dominate the mental side of the clinical picture. These psychic manifestations may approach the borderline of insanity and occasionally overstep it with a complicating major psychosis, usually manic-depressive insanity.

16. THE INFLUENCE OF IODINE

Despite statements to the contrary, toxic adenoma is rarely favorably influenced by iodine administration. This drug is incapable of transforming a hypersecreting adenoma into the colloid goiter of the resting stage. Under the influence of iodine the thyroid gland of the average toxic adenoma becomes more active than ever, the risk of surgery becomes greater, and the life which could have been saved easily is now in peril.

In the average case of Graves' disease iodine administration is capable of producing temporary marked benefit. This is not a statement commending its use in the hands of the inexperienced. Continued iodine administration usually is productive of serious harm in the course of time. Under its influence the thyroid undergoes marked colloid accumulation and becomes tremendously enlarged. Thus, if the swelling was immoderate to begin with, the patient may now complain of pressure symptoms and in extreme cases of iodine medication the thyroid may assume such a size as to require emergency thyroidectomy or even tracheotomy to avoid fatal asphyxia. The hyperplastic thyroid is very sensitive to iodine administration, so that the taking of this drug may be regarded almost as a clinical test in differentiation between toxic adenoma and Graves' disease.

17. THE RESULTS OF SURGICAL TREATMENT

Since in toxic adenoma the thyroid mass is responsible for the general symptoms, thyroidectomy, removing the offending neoplasm, results in recovery. The patient becomes and remains well, as is expected following tonsillectomy or appendectomy.

In Graves' disease, however, the thyroid, if swollen, is not neoplastic but hyperplastic and appears deranged from general or neuroendocrine causes. Hence thyroidectomy appears to attack not the cause, but the result. Hence surgery is neither complete nor permanent in a large percentage of patients. Improvement may follow thyroidectomy, but this is not synonymous with cure and in general does not stand the test of time. The use of the term hyperthyroidism to cover both toxic adenoma and Graves' disease results in confusion of surgical statistics.

18. CRISES AND REMISSIONS

In toxic adenoma there are no crises or remissions. A patient with a formerly harmless goiter becomes and remains toxic. There are no cyclic periods of improvement and exacerbation. Hyperthyroidism is progressive and thyroidectomy the only relief.

In Graves' disease the course is characterized by crises and remissions. The disease becoming established, the patient becomes gradually worse, reaching a peak in the symptomatology, the crisis. For a few months the illness is rather severe, associated in most instances with stubborn nausea, vomiting and diarrhea. If the patient survives, spontaneous amelioration occurs, and at the termination of twelve months a period of remission is reached. Then another crisis follows as before and in the course of time another remission, and so on.

19. RELAPSES AND RECURRENCES

Thyroidectomy is the last word in the treatment of toxic adenoma; following expert surgery there are no relapses nor recurrences.

Though capable of temporary relief of symptoms, thyroidectomy in Graves' disease is no assurance against relapse or recurrence of invalidism. The many thyroidectomized patients seeking the assistance of internists, roentgenologists and other surgeons attest the inconclusiveness of thyroidectomy in the treatment of Graves' disease. Aside from regeneration of thyroid swelling itself, postoperative invalidism may be due to relapse or recurrence of the former symptomatology, with or without operative myxedema.

20. SPONTANEOUS RECOVERY

The staunchest supporters of the view that toxic adenoma and Graves' disease are synonymous must admit that toxic adenoma never recovers spontaneously. If not operated upon, the goiter either remains its present size or becomes larger, and the toxicity persists in present degree or becomes aggravated.

That spontaneous recovery occurs in a large percentage of cases of Graves' disease is certain. (It is of course assumed that the process of spontaneity of recovery is under the supervision of expert medical attention, lest spontaneity lead not to recovery but to dissolution.) The formerly large thyroid becomes normal, as do the eyes, heart, metabolism and weight, and the individual is completely restored to social and economic usefulness and happiness.

CONCLUSIONS

1. Twenty points of differentiation between toxic adenoma (hyperthyroidism) and exophthalmic goiter (Grave's disease) are discussed in support of the premises that the two diseases are distinct entities not to be confused one with the other. These points discuss family history, age of the patient, duration of onset, predisposing and exciting causes, presence or absence of thyroid enlargement, physical signs over the thyroid, the weight of the patient, the eyes, heart, blood pressure, skin, fatigability, mentality, tremor, crises, remissions, relapses and recurrences, iodine response, the results of thyroidectomy and spontaneity of recovery.

2. It is pointed out that toxic adenoma is a thyroid condition giving rise to constitutional manifestations, while Graves' disease is a constitutional condition giving rise to thyroid manifestations.

3. This study would indicate the great need on the part of surgeons, internists, roentgenologists and general practitioners for a broadminded, intense study of toxic adenoma and Graves' disease with a view to rendering the term exophthalmic goiter obsolete and the term hyperthyroidism more specific.

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Is Bismuth Absorbed? The roentgenograms made from patients treated with intramuscular (buttocks) injections of bismuth subsalicylate, potassium bismuth tartrate, bismuth sodium tartrate and one unknown salt are presented by Bernhard Erdman, Indianapolis (*Journal A. M. A.*, April 13, 1929). He makes no attempt to evaluate the various bismuth preparations from the clinical standpoint. There is no question, he says, that bismuth favorably influences the blood Wassermann reaction in some patients. There is marked individual idiosyncrasy to the metal, as evidenced by the "blue gums."

MALFUNCTIONS OF THE THYROID GLAND IN RELATION TO AVIATION*

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During the past two and a half years it has fallen to my lot to make the physical examinations for aviation of several hundred young men from all sections of the Northwest. These included students at the University of Washington, applicants for flying training at the Army Schools of Aviation, candidates for appointment as Second Lieutenants, Air Corps, Regular Army, Air Corps Reserve Officers and commercial pilots. While conducting examinations, I have been surprised at the number of cases of goiter encountered and have become interested in this disease in its relation to aviation.

Prevalence of goiter in the Pacific Northwest offers opportunities for research and investigation which the physicians of this section of the country are taking advantage of in a most comprehensive and scientific manner. The resulting interest and knowledge gained therefrom they generously pass on to others. I have enjoyed participating in this interest with those physicians whom it has been my good fortune to know personally.

The thyroid gland has attracted the attention of men from the dawn of medicine, because of the vagaries attending its malfunction. All down the ages this gland has been the subject of various speculations and theories concerning its functions and uses, and as the years unrolled the study of the thyroid became more interesting and fascinating.

Galen in the second, and Vesalius in the sixteenth century described the thyroid. Endemic goiter has been known for at least 1900 years. Iodine has been used to treat it for 1700 years. Parcelsus in the sixteenth century was conscious of endemic goiter and the states called by us cretinism and myxedema. Wharton in the seventeenth century noted the excessive vascularity of the thyroid gland and outlined its anatomy. He named the gland from the Greek word "thyreos," meaning shield. Haller in 1776 wrote of its endocrine function. Parry in 1786 saw a case that would be called exophthalmic goiter today. Later he reported eight other cases and is given credit for the original account of this disease.

Iodine was resurrected in 1820. Tetany was described by Steinheim in 1830 and Dance in 1831. Graves of Dublin published his description of exophthalmic goiter in 1835. In 1840 Basedow reported four cases, emphasizing enlargement of the gland, protrusion of the eyeballs and palpitation. This is the common idea of exophthalmic goiter today, though we comparatively rarely see a case that has progressed to this point.

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In 1873 Gull described the syndrome known as myxedema. Ord named the result of thyroid deficiency myxedema because "the whole collection of symptoms are related as effects to jelly-like swelling of the connective tissue." The first excision of the thyroid for goiter was performed by Theodor Kocher in 1878.

These miscellaneous data had been gathered without particularly connecting the thyroid with its clinical diseases until the year 1886, when Mobius attributed what we now call hyperthyroidism to an excessive outpouring of thyroid secretion, and described a number of related symptoms which he considered due to qualitative or quantitative changes in the secretion itself.

In 1891 Murray showed that myxedema could be prevented by subcutaneous injections of thyroid juices. Cretinism and myxedema were identified as the same by Sir Felix Semon in 1888. In 1895 Baumann prepared a substance he called thyroidin. In 1899 Oswald considered the iodine of the thyroid gland to be bound up in a globulin-like body and the compound was called by him thyreoglobulin. The doctrine of the hormones was announced by Bayliss and Starling in 1902, and since then the thyroid secretion has been considered one of the hormones.

The past twenty years have seen the diagnosis and differentiation of the malfunctions of the thyroid gland placed upon a sound physiologic basis. Modern treatment, both preoperative and postoperative, has become so advanced that now, with rare exceptions, those suffering from malfunctions of the thyroid may be restored to fairly normal health[1]. Yet it is always advisable to check up such patients from time to time, and in some cases it becomes necessary to repeat the treatments in order to maintain the normal standard of constitution and function. Such individuals may at any time become inefficient, when subjected to undue stress and strain, and those who have once had unbalanced thyroid function are physically unreliable for aviation and should no more be accepted than should a financial official who has absconded be placed in trust of funds.

It is the function of the thyroid to produce and deliver thyroxin. Iodine from the compounds of iodine entering the gland is transposed into the iodine of thyroxin. The action of thyroxin in the tissues is not definitely known or understood. According to Plummer, it is a catalytic agent[2], while Crile considers it an accelerator of function and conductivity in the electrochemic mechanism, man[3].

The thyroid is a bilobed, multilobular gland, one lobe lying on each side of the trachea below the cricoid and thyroid cartilages, the lobes being connevted by an isthmus of thyroid tissue. Each lobe is pear-shaped, with the inner side of the stem portion paralleling the lower lateral beveled side of the thyroid cartilage, from which it is separated by the inferior constrictor muscles of the pharynx[1].

The thyroid lies in a horseshoe formation around the anterior and lateral sides of the trachea, fitting closely to it. The upper border is "U" shaped, having a flattened base where the isthmus occurs. The normal isthmus is 2 cm. in width and .5 cm. thick, covering the second and third tracheal rings.[1] Abnormally it may cover several tracheal rings and be very thick.

Between the isthmus and the cricoid cartilage there is normally a space, through which the trachea may be seen. If the tip of the finger is placed in this space, just below the cricoid cartilage, the isthmus can be felt during deglutition.[1]

The normal lateral lobes extend from halfway up the posterior borders of the thyroid cartilage down to the sixth tracheal ring. If firm pressure is made over this region, the opposite lobe of an enlarged gland may be easily palpated.

The normal thyroid, upon microscopic examination, will be found to consist of a net-like framework of connective tissue, accompanied by the vessels, lymphatics and nerves, within the meshes of which are round or oval vesicles, alveoli or acini. The alveoli are lined by cuboidal epithelium. The more regular the size of the alveoli the more normal is the gland. The alveoli are filled with colloid, the purpose of which is to act as a vehicle for storing the active principle of the gland, thyroxin.

The cells lining the alveoli are low cuboidal in shape. High cuboidal or columnar cells indicate an effort on the part of the gland and are signs of pathologic processes. When the colloid within the acini or alveoli contains granules or less completely degenerated cells, vacuolets or occasionally droplets of fat, these are considered evidences of degeneration.

The alveolus is both a secreting and a storing unit. The cells produce colloid and thyroxin. The average body needs are supplied by the cells directly secreting back into the bloodstreams. The colloid containing cell-enclosed area is a reservoir for storing and perhaps concentrating the thyroxin-containing colloid for moments of emergency.

Upon excessive stimulation the epithelial lining of the vesicle changes from low cuboidal to columnar cells in an attempt by nature to bring them to their highest production. If this response on the part of the thyroid is sufficient to take care of the stimulation, the gland returns to normal. However, if the stimulation is greater than the gland can accommodate, and there is more increase in the rate of metabolism, more call for thyroxin, then hypertrophy ends and hyperplasia commences. The number of cells in the vesicular lining multiply, and the colloid material is diminished in quantity, causing a crumpling of the walls of the vesicles. The call upon the vesicle for immediate delivery of thyroxin is so urgent that the process of storage is neglected.

Adenomatous goiters are manifested by hypertrophy and hyperplasia in nodular formation. Rienhoff and Lewis consider the adenomatous nodular goiter to be produced by a hyperinvolution or over correction of the pathologic process in the return of the hyperplastic goiter to normalcy, following rest or iodine treatment.[4] There are two types: simple adenomatous, with sufficient vesicle formation to produce excess of thyroxin when active; and fetal adenomatous, with inadequate vesicle formation . The latter are prone to malignant changes.

Exophthalmic goiter is pathologically a simple diffuse hyperplasia.

Colloid is a large, symmetrical goiter. The gland had previously been active and is considered now to be in the resting stage. Its function is subnormal. The vesicles are filled with colloid. The pure colloid is a goiter of deficiency and requires thyroid extract and iodine to bring the basal metabolic rate to normal. Plummer has never seen a colloid goiter with a basal metabolic rate below minus 18.[3]

Colloid goiters may change to periods of activity, passing through cycles of hypertrophy, hyperplasia and involution a number of times. In fact, whether a gland is hyperfunctioning or hypofunctioning, it is equally dangerous, as it may reverse its cycle at any time.[1]

Myxedema is a condition due to marked deficiency of thyroid secretion. This may be caused from atrophy by exhaustion of the gland, thyroiditis, or result from removal of too much of the gland. The basal metabolic rate is extremely low. the syndrome of myxedema is usually readily recognized.

When there is marked hyeprplasia, accompanied by exophthalmos, the symptoms are too prominent to be mistaken. But the cases of hyperthyroidism, where there is little or no enlargement and no apparent exophthalmos, require special attention. If there is enlargement, if the examiner places the tips of his index and middle fingers just below the cricoid cartilage and instructs the person being examined to swallow, the isthmus can be felt to rise under the fingers, permitting an estimate of its size.[1] If firm pressure is made with the thumb over a lobe of an enlarged thyroid, the opposite lobe may be palpated.

One of the principal symptoms of hyperthyroidism is excessive perspiration and intolerance of heat. Other prominent symptoms are a history of loss of weight with good appetite, a rapid heart and muscle weakness, the muscles particularly affected being the quadriceps. This can easily be brought out by instructing the candidate to place one foot upon a chair and lift himself upon it without the aid of his hands,[1] or by having him sit on the edge of a chair and extend a limb horizontally, holding it in this position for thirty seconds. He will experience considerable difficulty in performing these acts, if hyperthyroidism is present.

These individuals are alert, nervous, restless and impatient. The pulse is rapid, 90 to 100 in mild cases, 160 to 180 in more severe cases. The volume of the pulse is large and there may be marked throbbing of all accessible arteries. The patient has subjective sensations of throbbing, particularly marked, when he puts his head upon his pillow at night.[2]

Hyperplastic stimulation results in sympathetic nerve exhaustion, manifested by marked tremor, posing, nausea and diarrhea, which are not present in the simple hyperthyroidism of pure adenomatous goiter. Recently, Halloway, in a paper dealing with eye changes in goiter, included a high degree of ocular imbalance and a near point greater than 9 cm. among symptoms of malfunctioning of the thyroid.[5]

Adenomatous goiter in conformation is nodular, and may be asymmetrical, though rarely so. The symptoms are the same as those of hyperplastic goiter, minus the exophthalmos and nervous symptoms.[1] It may be accompanied by cardiac disturbances in the form of arrhythmia and myocardial changes, probably the result of long-continued or violent stimulation.[2] Adenomatous goiters come on later in life, as a rule. They are not amenable to medical treatment of any kind, and when active become a surgical condition.[1]

The principal object of this paper is to emphasize the importance of mildly malfunctioning thyroids as a disqualifying factor for aviation, and perhaps stimulate an increased interest in this aspect of goiter. The above symptoms have been collected and grouped, and certain simple and practical methods are offered to facilitate diagnosis and differentiation while conducting examinations.

In a recent article published in *The Military Surgeon*,[6] Lt. Col. Hathaway stressed the point that the highest type of physical and psychic equipment must be the standard in the matter of primary selection of pilots. Anything short of this would entail grave possibilities. These standards have been worked out by specialists, their combined efforts resulting in the specialty known as aviation medicine.

Further opportunities for research work will be offered in proportion to the advance and development of aviation. The endocrines will doubtless become important factors in the field of research and investigation. Efficiency, after all, is based on physiology, and temperament is largely a matter of balance of the glands of internal secretion, such as the thyroid, adrenals, pituitary and the gonads. The violent activities into which men are forced during flying training make demands upon these glands which their previous lives have never done. A normal gland will respond by an increased activity in proportion to the demands made upon it, maintaining a balance or equilibrium with other glands of internal secretion, while a gland already malfunctioning destroys this equilibrium, thereby seriously affecting the efficiency of the individual.

SUMMARY

The cells of the thyroid gland, after reaching the stage of hyperplasia, may become more or less permanently affected in shape, size and number, and the function of the vesicles as a whole impaired. It is a question whether involution is ever complete and the normal function entirely restored. At least, it is believed that a gland once subject to pathologic changes is more easily stimulated thereafter. It is well to remember that a gland may at any time reverse its cycle, whether hyperfunctioning or hypofunctioning.

An applicant, who is intolerant of heat complains of being hot, while others are comfortable, perspires easily, is nervous and restless, with rapid pulse and marked tremors, has a good appetite but is losing weight, has a high degree of ocular imbalance and a low angle of convergence, becomes easily fatigued and exhibits muscular weakness, may be simply subject to chronic nervous exhaustion, but should always be suspected of having a malfunctioning thyroid, and is entitled to have this differentiation completely worked out by rest in bed, repeated metabolic studies and a psychic investigation.

Similarly, a man with cold intolerance, gain in weight, cold hands, moist and livid skin, irregularity of heart rate and rhythm, nervousness and tremors deserves the same investigation, for he may be in the midst of a hypofunctioning period.

An old flyer who complains of "losing interest in the game" and "growing stale," with any of these symptoms, may be developing thyroid malfunction. If this has been proven, an individual may be properly considered "damaged goods" so far as flying is concerned. Should the above symptoms be discovered in an old pilot, a careful examination including basal metabolism check should be made and appropriate treatment instituted. He should never participate in pursuit or attack maneuvers nor prolonged cross-country flights, even in mild cases, and should be constantly under competent medical observation.

Many of the symptoms mentioned above, such as rapid pulse, fatigue, nervous instability, may be due to causes other than malfunctions of the thyroid gland, but, when present, should be regarded as suspicious of goiter, for when associated with other symptoms they certainly fit into the syndrome of the disease.

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CLASSIFICATION OF THYROID DISEASE

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For clinical use thyroid disease has been classified as follows:

1. Colloid goiter.
2. Adenomatous goiter.
    a. With hyperthyroidism.
    b. Without hyperthyrdoidism.
3. Exophthalmic goiter.
4. Myxedema.
5. Cretinism.
6. Malignant disease.
7. Thyroiditis.

It is in relation to 2 and 3 that we are at present concerned.

From our clinical, pathologic and experimental experience we are unable to distinguish any single sign, symptom, pathologic criterion or experimental proof of the existence of two entities in cases of hyperthyroidism. That is, we feel that the so-called toxic adenoma with hyperthyroidism and exophthalmic goiter are different manifestations of the same disease entity. That an adenoma may be present without hyperthyroidism is obvious.

About one-third of the cases of so-called exophthalmic goiter are found to have adenomas (Du Bois). Many of the so-called toxic adenomas have areas that cannot be distinguished from the exophthalmic gland in the gross and microscopically. In an hyperthyroid case there is no one single symptom or sign found to differentiate between "adenomas with hyperthyroidism" and the "exophthalmic type." Frequently the adenomas can not be seen except at operation. Frequently the exophthalmic type have adenomas at operation.

We have frequently heard the diagnosis exophthalmic type of goiter without exophthalmos, and we have also observed exophthalmos develop in a case which had long had an adenoma. Thus, not even exophthalmos or the presence of an adenoma can be said to be distinguishing points. Nervousness, tachycardia, tremor, loss of weight, sweating and psychic disturbances, etc. occur without any grouping or peculiarity that would allow of diagnosing hyperthyroidism into two different entities.

It had been theoretically decided at the outset of the use of Lugol's solution that exophthalmic goiter should have Lugol's and toxic adenoma should not. It has been our experience, as also that of Graham and Cutler, the Cleveland clinic and many others that Lugol's solution is valuable in all these toxic cases. This, if you will, may be taken as therapeutic confirmation of the essential unity of these two so-called entities.

Even the microscope finds no pathogneumonic factor in these cases. It has been our experience to have a very able pathologist report exophthalmic goiter on a lobectomy and on the second lobectomy a week later report "thyroid adenoma with lymphoid hyperplasia." It is not infrequently that we see this "primary thyroid hyperplasia with areas of adenoma."

In fact, in testing ourselves on unknown cases, we were unable to distinguish them microscopically. The hyperplasia and infolding of cells that is said to be characteristic of the exophthalmic type is really an evidence of activity which may be found in glands containing adenomas, when the gland is hyperactive. This condition is also modified by iodine administration and it then gives the picture of the alveoli filled with colloid.

Experimentally the glands of the various so-called types were taken from the clinic and ground up carefully, iodine content determined, and certain measured amounts from the various cases fed to tad-poles, properly controlled. The effect on the tad-poles' metamorphoses paralleled exactly in all cases the clinical appraisement of toxicity or hyperthyroidism. There was no discernible difference in the action of the gland from the various specimens except in regard to their clinical toxicity. We feel, therefore, that 2 and 3 in classification first stated should be:

2. Thyroid adenoma.
3. Hyperplastic goiter (hyperthyroidism).
    a. With adenoma.
    b. With exophthalmos.
    c. With both.

For there is no clinical sign or symptom, no pathologic finding or experimental proof that this entity of hyperthyroidism is made up of two distinct diseases.

CONCLUSION

Clinically, pathologically and experimentally there is no proof that cases with hyperthyroidism should be considered as two entities.

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SOME SKIN DISEASES
CAUSED BY INTERNAL DISTURBANCES *

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In reading over the books on dermatology one is struck with the paucity of facts cited under etiology. Under a number of diseases the usual beginning is, "the cause of this disease is unknown." This lack of definite knowledge of etiology is particularly true of some of the most common diseases, such as eczema, psoriasis, lichen planus, etc., while it is a fact that the uncommon skin disease, the one seen at rare intervals, has the most definite etiology.

This is true because these common diseases are not due to a single specific cause but are reactions of the skin to different internal disturbances. Knowing that the skin merely reflects internal conditions, we must endeavor to interpret these internal disorders and try to correlate the same with our skin findings.

As an example, consider pruritis, a sensory neurosis in which itching, burning and smarting are the subjective symptoms, while any objective symptoms are secondary and result from self-inflicted injury. There are no cutaneous symptoms to aid us and a very diligent search must often be made to locate the cause. While pruritis is described as a cutaneous disease, it is essentially a symptom of nerve irritation and in many cases this disturbance is further secondary to some internal, organic or functional disease, or it may be due to increased or decreased physiologic activity.

Functional or organic diseases of the stomach, intestines, liver, gall-bladder, kidneys, internal secretory glands, hyperglycemia, calcium unbalance, leukemia or psychic disturbance may be causative. The intense itching accompanying icterus, malaria, tuberculosis, diabetes, etc., is well known. Pruritis in some cases is the first symptom, even before we have urinary evidence of kidney disease.

Persistent unexplained pruritis in some cases should lead us to suspect malignancy. Pregnancy and the menopause are often accompanied by this condition. We have all seen cases of acidosis or a diminished alkaline reserve in the blood, where the urine is highly acid and the patient has a dry, harsh skin, the itching being intense.

Hyperglycema is one of the most common causes of pruritis. It is also associated with many other skin disturbances and in many cases it seems to be the essential underlying cause. Hyperglycemia sensitizes the skin to staphylococcic infections and these conditions often disappear with the return of the blood sugar to normal limits. Chief among these are carbuncle, folliculitis, eczema and xanthoma diabeticorum. These eruptions are not always due to sugar or acetone bodies in the urine for they occur without a glycosuria.

In another group, namely, seborrheic dermatitis, acne and rosacea, there may not be a hyperglycemia but the blood sugar approaches its high normal limit. All of these cases do not respond to reduction of the blood sugar and we must correct any contributing cause, such as staphlycoccic, ringworm infection, etc.

All the erythema group of skin diseases have an internal origin, for they are all due to some toxic substance that is carried to the skin by the blood stream. This may be bacterial from a focal infection, a foreign protein from food, or a direct chemical irritant such as a drug, and the type of dermatosis produced depends upon the intensity of the toxic action. The skin phenomena vary from transient erythema or urticaria to changes involving destruction of the walls of the small blood vessels, with exudation of their contents and sometimes destruction of skin tissues.

But of more importance we may have very serious effects upon the nervous, the cardiovascular, the respiratory or the gastrointestinal systems. In the case of localized inflammatory visceral lesions we know that various toxins are formed and that they have destructive influences on the endothelium of capillaries, resulting in the exudative erythemas, as we see in erythema nodosum associated with tonsillitis. We know that the skin lesion is not the only pathology but we must be careful of the endocardium, the pleura and the lining membrane of the joints in these conditions.

Rosenow has isolated a streptococcus in a number of these cases. We also know that the eruptions of the acute exanthemata are only a phase of the general infective process, the true cause being capable of producing more serious results than the eruptive phenomena. Other members of this group include erythema-multiformi, purpura and herpes zoster. They are all probably due to a bacterial infection, as they frequently develop following a pharyngeal, tonsillar or some other focal infection.

There is an intimate relationship existing between eruptions of the skin and dysfunction of the endocrine glands. Acne invariably begins with the onset of puberty and with few exceptions, disap-

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pears with its termination, and ringworn of the scalp ceases at puberty. There is a large group of pathologic changes in the skin due to thyroid dysfunction, varying from the erythemas and uticarias of the hyperthyroid skin, to the dry, harsh, icthyotic skin of hypothyroidism.

In hypothyroidism there is a falling of the hair or it may remain thin or underdeveloped, and in many cases this may be remedied by thyroid extract. Icthyosis, scleroderma and vitiligo also frequently occur with hypothyroidism and are benefitted by thyroid.

We know that alopecia areata is frequently associated with Addison's disease which is probably due to a disorder of the function of the suprarenal gland. Also alopecia after influenza and other febrile conditions is supposed to be due to adrenal exhaustion which is always present. The hair roots following these conditions show a disturbance in nutrition and the roots of the hair surrounding a patch of alopecia areata show this same nutritional disturbance.

We have treated about sixty cases of alopecia areata with a combination of thyroid and adrenal gland extract with no external treatment. All of these cases responded to this line of treatment except one case of a boy of sixteen, weighing about 190 pounds. Perhaps our doses were too small in this case.

Among these cases was a man of thirty-one who lost all the hair of the body while in France during the war. The entire body was totally without hair, when we started treatment in 1927. The hair returned and remained until about six months ago when we heard from him in New York, at which time the hair was falling out but he was drinking heavily and attributed the loss to this. We advised cutting out the liquor and beginning treatment again, and when we heard from him several months ago, the hair was returning.

On the other hand, hypertrichosis may accompany affections of the adrenals or genital glands and occurs especially in tumors of the glands. Beate and Baldo have collected eighteen cases of tumors of the adrenals with hirsutism and the connection between ordinary hypertrichosis and glandular dysfunction manifests itself in women particularly at the menopause. The change of life is also often associated with marked vasomotor disturbances in the skin, favoring the development of acne rosacea.

Lately psoriasis has been successfully treated with stimulating doses of x-ray to the thymus and we know that xanthoma diabeticorum, which is associated with diabetes, is due to dysfunction of the pancreas. Probably the most striking connection is in myxedema, in which the cold, dry, wrinkled skin and the thin, dry, lusterless hair approaches the normal under thyroid. Skin diseases resulting from endocrine dysfunction are probably not due to any one gland acting alone but to one or several of the different glands acting together.

Deficiency of blood calcium in many dermatoses has been greatly exaggerated, but improvement does occur in many skin diseases where the decrease is marked, and even in those cases where there is no deficiency improvement occasionally follows the administration of calcium in large doses. There have been glowing reports in the treatment of leg ulcers with calcium and parathyroid, where there has been no improvement under calcium alone.

The effect of nervous influences in various skin diseases is being constantly observed, such as the lighting up of an eczema, especially of the hands or anus, an outbreak of hives, the occurrence of angioneurotic edema, the recurrence of a psoriasis, acne or dermatitis herpetiformis, following mental strain or overwork. Neurodermatitis usually occurs in neurotic individuals and the nervous system seems to be the most important factor in the angioneuroses, such as Reynaud's, syringomyelia, neurotic gangrene of the skin and similar conditions.

In those diseases of the hematopoietic system, leukemia, granuloma fungoides and Hodgkin's disease, our suspicions are often aroused by a persistent scaly dermatitis, when it is impossible to differentiate these conditions by the blood.

Until recently tuberculosis of the skin, such as lupus vulgaris, tuberculosis verrucosa cutis, tuberculous ulcers and scrofuloderma were thought to be due to the local action of the bacillus in the skin, while the tuberculids, such as erythema induratum, and lichen scrofulosorum, were thought to be the result of a toxin, but at present both groups are classed as true tuberculosis, caused by direct extension of the bacillus from beneath or brought to the skin through the lymphatic or blood stream.

It is a matter of surprise, considering the close physiologic relationship which exists between the kidneys and the skin, that disease of the kidneys is not more often associated with skin eruptions but erythematous and exfoliative conditions do occasionally occur with renal disease. Purpura is frequently a sign of some grave internal disorder, as chronic nephritis, typhoid, cerebrospinal meningitis and the exanthemata.

PARALYTIC ILEUS AND HIGH INTESTINAL OBSTRUCTION

THEIR RATIONAL MANAGEMENT *

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In my daily hospital and surgical work the thought comes to me that a great many surgeons are doing wonderfully good and standardized abdominal surgery. They are becoming masters of the work that they perform. The preoperative regime has improved a great deal in the past few years. On the other hand, in reviewing the cases of death in a general hospital, I find there are different end-results among many equally capable operators. As closer study is made, there seems to be considerable difference in the postoperative care and postoperative judgment exercised.

I wish to present to you a resume of the experimental studies of Haden and Orr, McVicar, and a number of others; also, our clinical application of their ideas, and to report a few cases as extreme examples of management and care as practised by Dr. H. J. Whitacre and myself during the past four years. We were courageous enough, when these original animal experimentation results came into print, to begin applying them to postoperative cases, because it seemed such thoroughly sound research, and a step out of the so-called "postoperative guess work" stage into scientific physiologic chemistry.

There are only a few extreme cases which have been given the benefit of this management and treatment. Many milder cases were given the treatment without preliminary blood chemistry studies, and so rapidly recovered that no time was available to get complete study. It has become so much second nature to us to institute these measures and decide on the postoperative plan, that finer investigation details have been many times omitted. The turn for the better in some of these patients is so spontaneous and rapid as to be classed as remarkable.

Haden and Orr of the University of Kansas School of Medicine, in a series of detailed experiments on dogs, rabbits and monkeys, have called attention to certain quite constant and characteristic chemical changes taking place in the blood of animals, particularly dogs, after experimental high intestinal obstruction. Soon after the obstruction is made in the upper jejenum, the blood chloride begins to fall, the carbon dioxide combining power of the plasma increases; and when the blood chlorides have been depleted about one-fourth, there is a beginning rise of the blood urea nitrogen.

With the vomiting which occurs there is of course some loss of chlorides, but they feel this cannot be the sole cause of chloride depletion, since the same results occur in rabbits which do not vomit, and in monkeys which did not vomit at any time. These facts lend great credence that the chlorides are being used up or fixed in the tissues, and are used by the organism in a protective role. To prove this they have shown that it is possible to keep dogs with a high intestinal obstruction alive twenty-eight days without the development of toxemia or typical blood chemistry changes, and then to see them die of pure exhaustion and starvation. Control animals die in from two to six days; dogs given distilled water in same amounts as the chloride solutions died even sooner. No other salts tried have shown the same protective mechanism.

Later on similar obstruction experiments were repeated, doing a lateral anastomosis on about the third day or after the toxemia had developed from the primary obstruction, and all eight dogs died in from one to nine days. Six dogs were given distilled water and all died. One dog was given daily ½ per cent sodium chloride subcutaneously, lived thirty days, and died of exhaustion without any toxemia developing.

Five of seven dogs given 2 per cent sodium chloride subcutaneously recovered after the obstruction was relieved. The two others died from infection. Of ten dogs, treated intravenously and subcutaneously with a salt mixture of sodium chloride 2 percent and potassium chloride and calcium chloride in the same proportion as in Ringer's solution, eight recovered.

In another series of dogs a jejunal obstruction was made, but at the same time a catheter was placed into the jejunum distal to the obstruction. One-half per cent saline solution was injected daily into the catheter. One animal lived thirty days in this manner without toxemia. Distilled water and hydrochloric acid given in the same manner had no effect, and the dogs died promptly. This shows the value lies in the salt.

Reporting later, Haden and Orr have demonstrated that jejunostomy done simultaneously with obstruction or following the obstruction did not prolong life, and that to their surprise when no obstruction was made, and only simple high jejun-

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* Read before King County Medical Society, Seattle, Wash., Dec. 10, 1928.

ostomy was done, all of the six dogs died in two to five days.

These experiments have been corroborated with dogs by Walters, Kilgore and Bollman. Cameron reports twenty-eight cases of duodenal fistula with 43 per cent deaths in the human. This questions very seriously in all cases of small intestinal obstruction the value and the probability of harm with jejunal drainage. At any rate the greatest caution should be countenanced.

McVicar has pointed out some salient points in connection with the toxemia as distinguished from that of nephritis, namely, that in both conditions we have an increased urea nitrogen, but in nephritis there is a tendency toward chloride retention and acidosis. In this toxemia we are dealing with chloride depletion and alkalosis. The increased urea must come from tissue catabolism, since the amount in the urine is far above that of any possible protein intake.

Haden and Orr have subsequently shown by determination of the fibrin content of the blood in these cases that the increased urea cannot come from liver destruction, since low fibrin blood content is usually present in liver destructive processes. A high fibrin content is present in these cases. The one factor easy to obtain is a simple blood chloride estimation.

It has been shown by a number of investigators and clinicians that acetone and diacetic acid are common in the presence of an alkalosis. This has been true in many of our clinical cases. I find this is an argument usually presented in consultation on these cases. The physician is usually thinking in terms of the blood chemistry of the diabetic, forgetting that these are only evidences of a ketonuria.

SYMPTOMATOLOGY

The early symptoms and clinical features which we regard as important may be enumerated.

1. Any patient, who is still regurgitating or spitting up small amounts of stomach or intestinal content thirty-six hours postoperatively, should be regarded with suspicion and observed closely.
2. Distension may be present or absent.
3. There is early dehydration.
4. There is frequent desire for orange juice and ice water.
5. Clapotage may be present in upper abdomen.
6. There is high cheek color from increased percentage of hemoglobin, as result of dehydration.
7. There are twitchings of the fingers and face, even to the typical contractions of tetany. They have a lethargy and twitching somnolence.
8. They often have a quiet, tense face. The eyes and mouth are closed. The tongue may be moist. The eyes are often rolled up.
9. The pulse acceleration in the absence of corresponding temperature rise is highly significant. The thready pulse of the patient in shock may be present.
10. The physical evidence of obstruction may be lacking; no gas or stool is passed; the abdomen is often silent; pain is usually not present. Except for the cheek color, they look gray and moribund, but rarely present the cool, clammy type seen in general peritonitis with acidosis.
11. Add to these a characteristic lowered blood chloride and high carbon dioxide combining power, plus urea nitrogen retention and the picture is complete.

TREATMENT

Haden and Orr think 400 mg. blood chlorides per 1000 c.c. whole blood is the signal level to make treatment necessary. They recommend sodium chloride 3 per cent intramuscularly or 5 per cent intravenously, approaching 1 gm. per kilo body weight as the initial dosage.

I have never equaled this in a single infusion, but have over the period of from twelve to fifteen hours. I think, judging from our results, that this dosage level is probably not necessary in humans, particularly in cases of paralytic ileus.

When first beginning the use of concentrated salt solutions, we gave 300 to 400 c.c. of the 3 per cent sodium chloride in the pectoral muscles. Now we are giving 600 c.c. at the first dosage in the milder cases. For severe late cases we give all that we feel the tissues will tolerate, supplemented by intravenous injections of 3 and 5 per cent sodium chloride and 5 and 10 per cent solutions of glucose. In addition to this we elevate the foot of the bed ten to twelve inches to relieve any possible compression of the duodenal jejunal junction at the ligament of Treitz. Its possible relationship to the mechanism of gastromesenteric ileus has long been recognized.

Morphia is given with some regularity early in the treatment. We attempt to give the patient rest periods between the intervals of treatment in order to conserve their endurance.

The stomach is regularly emptied every four hours, if retention is demonstrated, and washed with hot water at 105° F. until clear. In some cases it has been possible to keep a Rehfuss tube in place continuously for lavaging. The additional fluid balance is maintained by infusion of normal saline and proctoclysis of glucose and saline.

Be on your guard against the overzealous desire on the part of some nurses to help your patient with soda bicarbonate, either by mouth, in proctoclysis or in gastric lavage water. A number of our controlled cases have been aided in their alkalosis by such administration of soda given in ignorance.

Let me now read you short summaries of a few cases to illustrate the type of patient in whom this management is of importance.

Case 1. V. B., male, age 35, lawyer, body weight 80 kilos. He was seen by me in consultation on the sixth postoperative day, following an appendectomy for chronic appendicitis with a few adhesions. He had been given morphia gr. 1/6 hypodermically periodically, glucose and soda proctoclysis, and soda bicarbonate solution was used for the gastric lavages. He had not been retaining. The abdomen was distended above the costal level, but not hard; no gas or stool was passed after the second day; the abdomen was silent; temperature 99.2°; pulse 130 per minute, weak in character. The patient was somnolent between periods of restlessness.

In consultation sodium chloride therapy was advised. The surgeon in charge gave 400 c.c. of 3 per cent sodium chloride intramuscularly that evening, and the blood chlorides the next morning were 396 mg. per 1000 c.c. whole blood. He was given 400 c.c. more and passed gas and stool. He went on to complete recovery.

Case 2, female, age 19, 50 kilos. Patient of Dr. H. J. Whitacre. She was brought into the hospital with a pulse of 130 to 140, in slight shock, and with the history of an abortion done by a physician about eighteen to twenty-four hours before. He had been so unfortunate as to hook his curette onto a loop of small bowel and had succeeded in pulling out through the vagina some twelve feet of intestine before ceasing. He left the house with the explanation that the fetus had a very long umbilical cord.

This was a typical case of intestinal obstruction. The mesenteric fan margin was exposed and only eight inches of terminal ileum remained. She was vomiting, the malar portion of cheeks were of high color, temperature 102° F.

An end-to-end anastomosis was done. On the second day postoperatively the blood chlorides were 300 mg. Subsequent to this she received 45 grains of ammonium chloride by mouth; 2000 c.c. normal saline subpectorally daily, and 2000 c.c. 3 per cent sodium intramuscularly. Soda was removed from the proctoclysis after the blood chloride determination. Recovery was complete, and she now has a child two years old from a subsequent pregnancy.

Case 3, male, 40 years, 60 kilos body weight. Came under my care on the fourth day of intestinal obstruction from Meckel's diverticulum with resultant gangrene near its base.

Preoperatively I gave 1200 c.c. of normal saline hypodermoclysis, and then did a resection of twenty inches of ileum to include the diverticulum and the soiled area of the mesenteric fan. At the same time a Witzel catheter drainage was placed about thirty inches above the site of the side to side anastomosis. The ileostomy drained small amounts of fluid and gas on the table. As soon as patient returned to bed, 25 c.c. of normal saline was introduced through the tube hourly for ten days. Stomach lavage was given every four to six hours for three days; 850 c.c. of 3 per cent sodium chloride intramuscularly was given in one dosage. This was a case done before the hospital laboratory was equipped to do the blood chlorides and carbon dioxide combining power estimations. He made a splendid recovery.

Case 4. Patient of Dr. Whitacre's. Male, 73, 65 kilos body weight, was brought to hospital five days before opertion with diagnosis of common duct obstruction from stone. He was deeply jaundiced.

He was on preparation by us for three days with calcium chloride intravenously and glucose 5 per cent intravenously, preoperatively. His preoperative blood urea was 14.3 mg. At operation common duct stones were removed and cholecystectomy done. A T tube was placed in the common duct for drainage. On the second day postoperatively the blood urea was 18.61, and blood chlorides 224 mg. Patient was involuntary, dry, lethargic with sordes in the mouth, and irrational. He got out of bed, and was incoherent; the abdomen was distended. The T tube gave good bile drainage. He then received 1200 c.c. of 3 per cent sodium chloride solution intramuscularly. The blood chlorides following this were 434 mg.; then 1000 c.c. more of the 3 per cent salt solution were given.

He had been on continuous proctoclysis of glucose since operation. He too had received some soda from nurses. He made a complete recovery.

Case 5. Mrs. A. J. D., age 49, female, 55 kilos, was operated on by me for contracted gallbladder with stones and adhesions, a cholecystectomy and appendectomy being done. There was good immediate postoperative anesthesia recovery. A small amount of bile was present alongside the cigaret drain on the second day.

The third day distension became progressive. There was gulping and spitting of bilious stomach and upper bowel content. Lavage returned large amounts every four hours. No gas or stool was passed by rectum. Marked lethargy ensued. The eyes rolled up. She was at times irrational. The fingers twitched. The mouth was parched, and she craved ice and orange juice. The pulse was 140, the temperature 99.4°. After 500 c.c. of 3 per cent sodium chloride intramuscularly, a blood chloride estimation was 256 mg. with a carbon dioxide combining power of 96 volumes per cent. Following this 1700 c.c. of 3 per cent sodium chloride intramuscularly and 900 c.c. of 5 per cent glucose intravenously were given, and she received constant Murphy drip of normal saline and glucose 4 per cent. Ten c.c. of calcium chloride 5 per cent were given intravenously on the fourth day postoperative. Following these measures, another blood chloride estimation was 400 mg. At this time gas and stool began and then followed the usual diarrheic movements of terribly foul odor. She made a complete recovery.

Case 6. Mrs. H. M., age 40, 5 ft. 3 in. tall, 95 kilos body weight. Operated on by Dr. Whitacre for cholecystitis, subsequent to a previous cholecystectomy done elsewhere four years before. Cholecystectomy with drainage was done.

The pulse returned to 100 per minute postoperatively on the second day. Glucose and soda were given in the proctoclysis on the first and second days. During both days there was vomiting. On the third day both hiccoughing and vomiting. Lavage returns were of the fecal type. The pulse was thready and 170. She was dusky gray in color, irrational and somnolent. The foot of the bed was elevated and lavage every four hours was instituted. Over 2000 c.c.

of 3 per cent sodium chloride solution intramuscularly and 1000 c.c. of glucose 5 per cent intravenously were then given Blood chlorides were not determined before these measures, but were only 400 mg. afterward. She then went on to rapid recovery. This case was miraculous to observe under treatment. Her nurse had been "helping her along" with soda most of the time, without our knowledge.

This patient had a definite paralytic ileus and upper intestinal stasis, a distended abdomen with fecal regurgitation. There were no bowel movements except involuntary proctoclysis evacuations.

In conclusion, it should be emphasized that we possess scientific accurate means of determining the physiology and blood chemistry of our postoperative and preoperative patient. This, combined with your clinical judgment and experience, gives one a means of diagnosing and attacking these difficult complications of surgery. Add to this the knowledge that sodium chloride in abundance is life-saving and will restore peristaltic activity, and you have the armamentarium for avoiding unnecessary surgical deaths.

We feel that many jejunostomies are unnecessary, even dangerous. In fact, neither Dr. Whitacre nor I have done one as a secondary operation in the past four years, and can not recall a single case wherein postmortem findings or clinical judgment has made it seem that omission was a mistake.

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Amaurosis in Epidemic Encephalitis. Irving J. Sands, New York (*Journal A. M. A.*, April 13, 1929), reports an unusual case of epidemic encephalitis. The diagnosis was arrived at after a careful evaluation of all the presenting signs and symptoms. The definite history of exposure to infection, the rapid onset of impairment of vision, the multiplicity of lesions and the changing signs and symptoms led to the conviction that the disease process was of an inflammatory, disseminated, irritative nature, rather than of a neoplastic type. While the roentgenogram showed a calcified pineal shadow, Sands felt that he was not dealing with a true internal hydrocephalus caused possibly by an enlarged pineal gland. The presence of papilledema was an annoying symptom. It is not commonly encountered in cases of epidemic encephalitis. The duration of amaurosis in Sands' patient makes the case particularly unusual. She was totally blind for twelve days.

INTRAVENOUS GLUCOSE SOLUTION

A SIMPLE METHOD FOR ITS PREPARATION*

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The earliest records of administration of drugs by the intravenous method antedates the first knowledge of bacteriology and asepsis by several centuries. The early Egyptians are said to have used blood transfusions as a therapeutic measure but the earliest reliable record of such procedure cites the recommendation of a blood transfusion in 1492. Wren of Oxford University is credited with the first intravenous administration of drugs to both animals and man in 1656. Further progress was not marked until the advent of bacteriologic knowledge in the latter part of the nineteenth century.

During the past forty years there has come into use an increasing amount of intravenous therapy. This has been stimulated by the large amount of experimental pharmacology and toxicology. Modern knowledge of bacteriology has made the intravenous method of medication a supposedly and relatively safe procedure.

It is the purpose in this paper to limit comment to the intravenous administration of glucose solutions and particularly to the preparation of such solutions. In 1907, Fleig administered sugar intravenously and noted the effects but made no clinical application. Clinical use of intravenous glucose as a nutrient was made by Kusch in 1911 in such conditions as hyperemesis gravidarum, hysterical vomiting and surgical diseases. In America, Fischer in 1915 recommended its use in nephritis. In 1917 Erlanger and Woodyatt used intravenous glucose in shock. Litchfield, in 1918 at Camp Lee, reported extensive use of glucose in the treatment of pneumonia without serious complications. Since 1918 intravenous glucose has been used extensively in a very wide range of pathologic conditions. Concentrations of over 10 per cent have been used chiefly for dehydration or in small amounts for emergency treatment of hyperglycemia.

Throughout the country during the past ten years, severe reactions have occurred, following a not inconsiderable percentage of intravenous administrations of glucose. The symptoms noted in these severe reactions have been severe chills, hyperpyrexia, prostration and circulatory collapse;

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and occasionally even death has been attributed to this cause. It has been repeatedly mentioned to us by physicians in this and other cities of the Pacific Northwest that great hesitance is felt in the intravenous administration of glucose because of fear of severe reactions.

The following brief statement will give some idea of the precautions taken against such reactions by at least two large institutions in this country. Previous to 1926, a commission of the staff was appointed by a large Eastern clinic to investigate and outline a procedure to be followed in the preparation of intravenous solutions. A special intravenous solution laboratory was established. Stills were installed to give triple distilled water. Special glass ware and rubber tubing was employed. Special messenger service was employed to permit of only a brief lapse of time between the hour of preparation and the hour of administration. The C. P. glucose employed was given an animal test for toxicity.

At a large Boston hospital sulphide-free rubber tubing was employed only after passing it through a special process of purification, using sodium hydroxide and washing. In addition to this other precautionary measures were taken.

Various theories were advanced to account for the reactions and to indicate the care necessary to prevent them. Numerous careful studies were made of the PH values of the various solutions and it was advocated that great care in PH adjustment should be taken; that only special sulphide-free rubber tubing be employed which has been further purified by sodium hydroxide and washing; that only triple distilled water be used; that only special glassware be employed; that care must be taken in selecting the glucose used. Only especially purified preparations met with approval.

Previous to April, 1928, at Virginia Mason Hospital, and so we are informed at other standardized hospitals in the Pacific Northwest, reactions often alarming in severity were encountered sufficiently often to discourage the use of intravenous glucose solutions. At that time the following technic of preparation was instituted.

1. *Preparation of sterile distilled water.* City water doubly distilled is employed. In the distilling process the water comes in contact only with metal (stills are all tin lined). Double distilled water, taken freshly from the still on the morning of preparation, is collected directly into clean pyrex Erlenmeyer flasks of one litre capacity. These are not used for other purposes. The flasks of distilled water are then closed with a cotton gauze plug and autoclaved for twenty minutes at twenty pounds pressure. *Each morning any flasks remaining from the day previous are emptied and refilled with freshly distilled water.*

2. *Selection of glucose.* Both Baker's and Merck's C. P. anhydrous dextrose have been found satisfactory. No animal tests of toxicity have been made.

3. *Preparation of the glucose solution.* An amount of anhydrous glucose sufficient to make a solution of desired percentage is weighed and placed in a previously sterilized and plugged pyrex Erlenmeyer flask. Two hundred cubic centimeters of sterile distilled water is added from one of the flasks, prepared the morning of the day that the glucose solution is being made. After dissolving, the solution of glucose is carefully brought to a slow boil for three minutes. The technician constantly watches to prevent violent boiling which might result in some carmelization. Should any occur, the solution is discarded. After boiling, sufficient sterile distilled water is added to bring the fluid level to the one litre mark.

The gauze cotton plug is inserted into the bottle and is tied in place. A label showing the date of preparation, the name of the technician, the strength of the solution, and marked "for intravenous use" is attached to each flask. Blank spaces on the tag are supplied for the name of the patient, the date of administration, the name of the physician giving the injection, the name of the technician who prepares the solution, and for notation regarding untoward symptoms noted during or after the injection.

In making all transfers from one flask to another, strict bacteriologic technic is conscientiously observed. Occasionally the presence of carbon particles which have been present in the anhydrous glucose employed makes filtration necessary, in which case the original solution is boiled for ten minutes after filtration, rather than three minutes.

Glucose solution for use during the day is made in the morning. Glucose solution for use during the night is made in the late afternoon. Each morning all unused sterile distilled water and prepared glucose solutions are discarded and new solutions are prepared.

Prepared solutions are kept in the ice box and taken to the bedside at the time of administration, when the solution is brought to body temperature. Properly fitting rubber corks with glass and rubber tubing and needles which have been sterilized are kept on hand. The cork is carefully applied to the bottle after removal of the gauze cotton plug. Administration is completed according to the usual method employed for the giving of intravenous or subcutaneous salt solution. No special warming apparatus is employed. The time for giving one litre of 5 or 10 per cent solution varies from forty to sixty minutes. Ordinary best quality rubber tubing, which is not sulphide-free, is employed. It is subjected only to boiling and thorough washing before use.

Considerable chemical, biologic and bacteriologic supervision and investigation has been made of these solutions during the reported period of our experience. These will be reported by one of us in a later paper.

More than three hundred administrations of glucose are incorporated in this report. Twenty of these were 20 per cent solutions and the balance were 5 and 10 per cent solutions. But two reactions have been noted in the total number of administrations of 5 and 10 per cent solutions. One of these occurred in a child who was very septic with acute osteomyelitis, following unusually rapid injection of nearly a full litre of 10 per cent solution. The other was in an adult, when the glucose solution was given to a desperately ill patient within thirty minutes after a blood transfusion. Mild reactions have been noted in six of the twenty administrations of 20 per cent solutions. It should be noted that these were all given in postoperative brain cases. I am told that the use of any intravenous solution as hypertonic as 20 per cent not uncommonly causes some reaction, particularly in instances of cerebral pathology.

SUMMARY

A simple method of preparing intravenous glucose solutions has been successfully employed at Virginia Mason Hospital for a period of one year. Practically no reactions have occurred following the proper administration of glucose solution prepared according to the specified technic. No special attention is given to the PH of the solution, i. e., no adjustment of the PH of the solution is made. No special rubber tubing is employed. A good quality of tubing is used after boiling in water and thoroughly washing and cleansing. No special animal tests for toxicity of the various purchases of dextrose are made. Pyrex glassware seems advisable.

Our experience leads us to believe that the important elements in the preparation of intravenous glucose solutions are:

1. Glucose solutions over fifteen hours old should not be used, although solutions twenty-four hours old are probably safe. In the past, glucose solutions several days or several weeks old have been used and this in our opinion has been the most important factor in the causation of reactions. (The PH of these solutions is very low and probably other changes have taken place.)
2. Only double distilled water which has passed through the still the day of use should be employed. In some parts of the country triple distilled water may be advisable.
3. Only anhydrous dextrose of a very high grade of purity should be employed. Ampoule solutions of dextrose are safe only when used undiluted or when diluted with freshly and properly distilled water.
4. The preparation of glucose solutions in a hospital is a laboratory problem and should be done only by experienced technicians.
5. Apparently any precautions other than these cited above are superfluous.
6. We believe that detailed adherence to this simple procedure will eliminate most of the reactions to the intravenous administration of glucose solutions.

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CONGENITAL HEART-BLOCK

REPORT OF A CASE

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The difficulties of establishing the diagnosis of congenital heart-block in children with bradycardia are obvious. Certainly the condition must be considered in a child with a slow pulse, when the history of acquired disease, such as diphtheria, rheumatic fever, syphilis or pyogenic infection is lacking.

Congenital heart-block is so commonly associated with congenital malformation of the heart that its presence gives support to the diagnosis. This is particularly true of patent interventricular septum. The bundle of His lies directly above the upper part of the septum. This is the last part of the septum to close and consequently the most common location of the septal defects.

Davis and Stecher[1] have recently reported a case and reviewed the literature. This review contains a synopsis of nineteen cases which they have accepted as showing sufficient evidence to warrant the diagnosis of congenital heart-block.

J. Williams, age 7, was first seen October 20, 1926. Family history revealed no information of importance. No history of diphtheria, rheumatic fever, syphilis or severe pyogenic infection was obtainable. The history of an occasional cold was noted. None of these had been severe enough to have necessitated his being in bed for more than a day. The father gave the history that six weeks before, the boy, on his way home from school, suddenly became dizzy and fell over in a faint which lasted two to five minutes. There was no convulsion as far as parents were able to learn. No similar spells nor convulsive seizures had occurred previous to this. He was examined by a doctor soon after this spell who found the pulse to be around 50.

Examination: The patient was small for his age but well nourished. There was no cyanosis nor clubbing of the fingers. The teeth were in good condition. The tonsils were enlarged slightly but otherwise showed no evidence of disease. The lungs were clear.

The precordial impulse was circumscribed. The apex was localized in fifth interspace just outside the nipple line. The left heart border was 9 cm., the right heart border 3 cm. from midsternal line. A loud blowing systolic murmur was heard over the entire heart but was loudest along the left sternal border at the second and third interspaces. It was transmitted downward and to the axilla. The pulse rate and heart rate were the same, being constantly between 48 and 50. This was not altered by exercise, nor did it provoke any unusual dyspnea. Synchronous tracings of the venous and radial pulses showed a complete dissociation of the auricles and ventricles. Blood pressure, S. 100, D. 80. Fluoroscopy showed a globular type of configuration. The remainder of the examination was negative.

A second examination was made on June 26, 1928. Since the first examination parents had attempted to control the child's activities, but were only partially successful. He had continued to play as other children, with no apparent ill effects. His pulse had continued to be 48 to 50.

The examination was essentially the same as the first. The heart rate and the murmur were the same. The radiograph showed a globular configuration (fig. 1) with a transverse diameter of 10.7 cm. The chest diameter was 21 cm. The electrocardiogram (fig. 2) showed a complete auriculoventricular dissociation. The auricular rate was 75 and the ventricular 46.

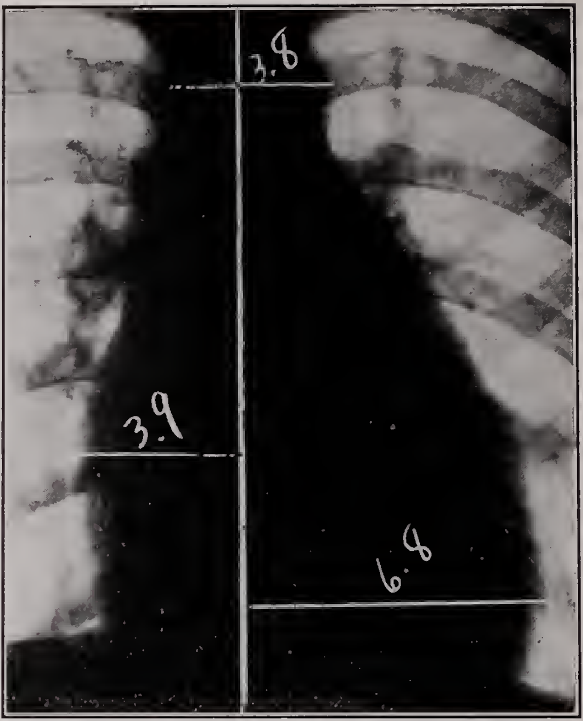

Fig. 1.

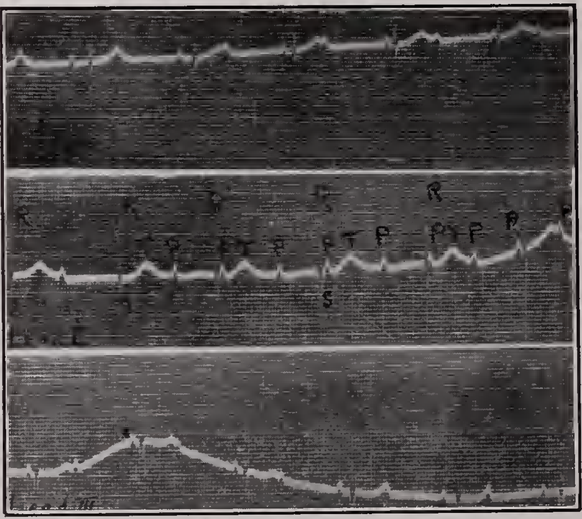

Fig. 2.

Comment. In the above case a complete heart-block has been demonstrated by electrocardiogram in a boy seven years old. In the absence of a history of acquired diseases, such as diphtheria, rheumatic fever, syphilis or pyogenic infection, congenital heart-block must be considered. The heart findings point to a patent interventricular septum. This lends support to the diagnosis of congenital heart-block.

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IMMUNIZATION AND THERAPY IN COMMUNICABLE DISEASES

THEIR PRESENT STATUS *

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This is an era of preventive medicine. Tradition pictures the doctor as a healer of the sick, and the influence of tradition on the medical profession is well known. As a result we have been slow to take up preventive medicine as a body, and it is getting out of our hands and being pushed by public health authorities, welfare leagues and insurance companies.

In every city and community the question of the free clinic presents itself. The physician, while only too glad to do deserving charity work, wonders just how much right the general public has to his servives for nothing, nor does he want the paid public health physician coming into the community and giving free services. These things contribute to the fact that most men are either secretly or openly antagonistic to the free clinic, but we cannot overlook the fact that it is beneficial to the general community health.

I am not here to argue either for or against, because I think, particularly in larger places as here, that it is an individual community problem. Perhaps the best way is for the physicians themselves to show more interest, and to furnish a real public health service to their families and to their communities. It is surely much simpler and cheaper to educate the physicians in a community in the matters of preventive medicine in public health, than to attempt to educate the whole community. Doctors must become as conscientious in practicing preventive as they are in practicing curative medicine. This does not mean that we should seize upon every serum that appears on the market and inject it into our patients without fully investigating it, but it is necessary that we keep ourselves informed as to those things worthwhile, and attempt in turn to educate our patients along that line.

The object of my communication this evening is to give a brief review of the serum prophylaxis and treatment in the contagious diseases of childhood, from the standpoint of the general practitioner and the department of health. Practically the only way which our health department has to control these is by quarantine. Any active immunization is in the hands of the physician, and it is his duty to see that every family under his care may have the benefit of the ordinary preventive features which are far too frequently overlooked.

Diphtheria, although much less frequent than formerly, still holds a prominent place in death records. You are all familiar with statistics showing the almost complete absence of this disease where the use of the toxin-antitoxin is prevalent. Infants inherit about six months immunity from the mother. After that time the baby should have three weekly injections of 1 c.c. diphtheria toxin-antitoxin. It is not always possible nor practical to give this during the first year, but certainly it should be given at eighteen months of age or soon thereafter. The physician should not neglect to explain the benefits of active immunization against diphtheria to every parent who visits his office.

There is practically never a reaction in a child of this age, and the injections, if properly given with a sharp needle, should not even be noticed by the child. During the early use of the toxin-antitoxin, several unfortunate sequelae were reported, but the present serum as marketed by any of the reliable pharmaceutical houses is nontoxic and causes only slight, if any, reactions, no dangerous ones, even in older children and adults.

The preliminary Schick test can well be abandoned in private practice in all children up to seven or eight years. They will practically all show positive tests, and as the test itself is more painful than the injections, it only serves to frighten the child and mother for later toxin-antitoxin injections. The Schick test should be done six months afterwards, and those children giving a positive reaction, usually from two to eight per cent, are given another course. No children will require more than the second course.

The question of sensitizing children to horse serum comes up here. A recent paper before the Seattle Pediatric Society quoted statistics from the Municipal Contagious Hospital in Chicago, in children who had received therapeutic doses of scarlet fever, erysipelas and diphtheria antitoxin. It was found that the percentage of reactions was much greater in those who had previously had toxin-antitoxin than in cases who had had no previous serum. With this in mind a toxin-antitoxin mixture prepared from goat's serum has been marketed by Lilly, and is being used by a number of men. One who used it in a series of cases recently told me that on reSchicking he found the number of children not immunized was much larger than when he used the horse serum. This might suggest that the potency of the goat serum toxin-antitoxin is not as great, but it is too early to draw conclusions about this.

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* Read before King County Medical Society, Seattle, Wash., Feb. 4, 1929.

In France, a nontoxic horse serum, designated as toxoid or anatoxin, is being widely used. This horse serum has lost its toxicity but retains its immunizing power. The claims set forth for it are that it does not contain the protein substances of horse serum and, therefore, is unable to sensitize the patient. Possibly one of the above will eventually replace our present toxin-antitoxin mixture. However, in spite of this kind of reports, Dr. Park of the N. Y. State Board of Health, who has had more experience along this line than any other man in the country, takes the position that the amount of sensitization produced by the horse serum toxin-antitoxin is negligible and certainly not to be compared with the benefit of immunization. So far as we know the immunization lasts a life time, and if every preschool child received it, we would soon wipe out diphtheria entirely.

Smallpox. In 1922, there were 28,000 cases of smallpox reported, and since that time there has been a yearly increase. All children should be vaccinated as soon after one year as possible. The duration of the immunity is probably about four years, a fact which is not recognized generally by the public, and causes a feeling of false security against the disease. Vaccination should be repeated at the end of this time, or possibly before if an epidemic threatens.

Scarlet Fever. In 1923, Drs. George and Gladys Dick established the relationship of scarlet fever to a hemolytic streptococcus, and prepared from it a toxin which, injected intradermally, will enable us to determine the immune from the susceptible. Also they have prepared an antitoxin, as well as a toxin-antitoxin, for immunization purposes. It is their opinion that the only sure immunizing dose is that consisting of at least five increasing doses. We know that this will probably immunize about 80 per cent of the cases, but the duration of the immunity is not definitely known, probably not over two years and in many cases less.

Also the reactions obtained from these injections, while not dangerous, are disagreeable and constitute a serious drawback to its use on a large scale in private practice. The anxiety of watching these children through the reactions to me is greater than watching them through scarlet fever, and is spread out over a longer period of time. Possibly, if we could start with smaller doses and spread them out over twelve or fifteen injections, the reactions would be less, and immunity better conferred, but this would hardly be practical.

Many pediatricians throughout the country with large private practices have discontinued its use. I personally have had enough experience in clinics, where scarlet fever immunization has been attempted, to satisfy myself as to its use. Also these reactions do not ordinarily encourage confidence in the parents who have placed their children in the physician's care. I am inclined to feel the same way about the use of the antitoxin, particularly in exposure cases.

Just why scarlet fever antitoxin should produce more reaction than diphtheria or tetanus antitoxin has not been fully determined, but there seems to be no question that many persons are more sick with the protein reactions than they probably would have been with the scarlet fever. Larsen of Minneapolis has prepared a ricinolcated scarlatinal streptococcus antigen which has been detoxified so that the reactions are much less, but other men have failed to duplicate the results as regards immunity production. Recently I had two children in my office who had received Larsen's mixture in Minneapolis one year before. With this in mind, I found they both gave a positive Dick test, showing that they were not immune. It does not seem to me that our scarlet fever here is particularly severe anyway, only twenty-three deaths in the last eight years, never more than three in one year.

Whooping Cough. Vaccines, both mixed and pertussis, have been used for many years. Their use is lauded more by practicing physicians than by pediatricians in medical schools or physicians in charge of children's institutions.

Some men use it routinely and others fail to find that it has any effect on the development or course of the disease. Several years ago at a meeting of the Central States Pediatric Society in Chicago, Black gave a report of several hundred cases of whooping cough treated with vaccine. Hess then reported several hundred cases treated with x-ray. Following the general discussion, Abt remarked that, since he started to practice medicine, there had been some 900 cures promulgated for whooping cough, and as a result of his experience with the vaccine, this was probably the 901st. It does no harm to give it, apparently it does help considerably in some cases, but certainly it is not a specific, and we must rely on rigid quarantine, proper nursing and general care to prevent the serious complications of whooping cough, which of late years has displaced diphtheria at the head of the mortality lists.

Measles. Close to whooping cough in mortality is measles, considered by most people to be a harmless disease. It is by far the most contagious of any of the infectious diseases, and any susceptible child exposed is almost 100 per cent sure to contract it. In the ordinary well-nourished child of three years or over, measles will run its course and confer an active immunity, but it is in the younger infants and children in poor physical condition where a severe attack is apt to terminate in a fatal bronchopneumonia or tuberculosis, and it is in these cases particularly that we should be able to protect or modify the attack.

There is not at present a measles prevention serum on the market, but considerable work is being done with satisfactory results on immune goat's serum. However, we know that the injection of five to ten c.c., depending on the age, of convalescent serum or plasma intramuscularly into a child during the first five days of exposure will protect him from the disease. At least it will so modify the attack that it is very mild and not likely to lead to complications. During an epidemic of measles at one of the children's homes here recently, a family of five children moved into the home. None of these had had measles. Convalescent serum was collected from some of the recently recovered older children and four of these five children were injected with five c.c. on the fourth day of exposure. The fifth was a girl of two years who received only two c.c. At the end of her second week of exposure she developed a faint measles rash and a temperature of 100° which disappeared in twenty-four hours. The other children did not contract measles. The ideal result, of course, was obtained in the little girl who received only enough serum to modify the disease, and she has the benefit of an active immunity. The serum gives a passive immunity for two weeks to one month.

Blood should be taken preferably shortly after defervescence, but may be taken one to four months after. The earlier after defervescence that the plasma is collected the greater is its protective value. Whole blood taken six to nine days after defervescence and injected during first few days of exposure will protect from or modify the disease. Injections after the seventh day of exposure usually have no effect. The serum may be pooled from several donors, preserved with chinosol (1:1500) and stored in ice-box for several months. This is an excellent method of aborting an epidemic of measles in hospitals, and all children's institutions should have a supply on hand or available during the measles season.

Epidemic poliomyelitis might be mentioned here in view of the recent epidemic and the possibility of its recurrence with warmer weather. The great value of convalescent serum in infantile paralysis lies in its early use, that is, in the preparalytic stage. Dr. Flexner of the Rockefeller Foundation has done considerable work on this subject, and during the recent number of cases here I took occasion to write him about its use. His answer was the convalescent serum may be safely taken from a polio case three or four weeks after the febrile period. As to how long afterwards we may consider it as convalescent serum, Flexner stated that antibodies have been found in the blood as long as forty-five years after the acute case. He, therefore, advises even adult whole blood if no convalescent serum is available. Flexner also enclosed a detailed description of how to collect the serum and preserve it.

In the presence of an epidemic it should be a simple matter for the Health Department to keep a supply on hand. We have been keeping some on hand at the Orthopedic hospital, but the supply has been limited. During an epidemic the Health Department has access to all cases and could afford to buy serum at a nominal rate ($10.00 per 100 c.c. blood).

In closing, I would like to say that, although many of you will not entirely agree with some of the above, I believe it represents in general the consensus of opinion as to the present status of serum prophylaxis and therapy in the contagious diseases among practicing pediatricians throughout the country.

SOLUTION OF PITUITARY AND RUPTURED UTERUS. A. M. Mendenhall, Indianapolis (*Journal A. M. A.*, April 20, 1929), asserts that solution of pituitary is a valuable drug for postpartum hemorrhage. It is probably safe in the third stage of labor. It is probably safe in the induction of labor if used cautiously and in properly chosen cases. It is never safe in the first stage of labor. It is rarely if ever safe in the second stage of labor. Its chief value is to the accoucher instead of to the mother or the baby. Other obstetric procedures are nearly always safer. There can be no rule as to the treatment of ruptured uterus, but the attendant must remember that conservatism may save many patients when more radical procedures may prove fatal.

COD-LIVER OIL AND ACTIVATED ERGOSTEROL THERAPY *

ITS PRESENT STATUS

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The past decade has been one of momentous importance to the whole world in the discovery of the specific cause and cure of rickets. From 1650 to 1922 practically no progress was made on this subject. In 1922 McCollum, Simmonds, Becker and Shipley[1] proved that vitamin D was the substance lacking in rachitic subjects, that it was distinct from vitamin A and that the most concentrated source of this vitamin was in cod-liver oil. Although cod-liver oil has been used for centuries as a medicinal agent, the specific treatment of rickets by its use has only recently been understood.

In 1919 Huldschinsky[2] demonstrated that ultraviolet rays could definitely cure rickets. Within the past few years activated ergosterol has assumed the most important place in the therapy of rickets and other conditions of calcium deficiency, due to the efforts of Steenbock[3]. With any of the above mentioned therapeutic agents the attempt is made to increase the deposition of calcium and phosphorus in the blood. Due to the fact that these amazing discoveries are so recent, a survey of the subject will be presented, with the object of simplifying the most effective treatment of rickets and other conditions of calcium deficiency.

Cod-liver oil was considered useless in 1910 by most scientists. In 1914 it was found to be the richest source of the newly discovered vitamin A and until 1925 stress was laid on its growth-stimulating vitamin A. In 1923, when Steenbock[3] discovered the active principle of cod-liver oil and found that irradiation of this substance produced the effects of vitamin D, a more interesting era of development presented itself.

Cod-liver oil is now capable of being standardized, chiefly by means of the McCollum line test. This test measures the antirachitic activity of substances containing vitamin D. In this method, dissected femurs of treated animals are stained with silver nitrate in such a manner that any fresh deposits of lime due to the addition of vitamin D or its equivalent are recognized. The radiogram may also be relied upon, showing the formation of a broad band of calcified cartilage at the end of the tibia, which becomes dense and does not permit the transmission of light. The ash content is also an index of the amount of calcium present.

The U. S. P. requirements for vitamin A are 50 units per gram. There is at present no U. S. P. official standard for vitamin D. Hess[4] has recently demonstrated that the antirachitic potency of cod-liver oil varies inversely with the amount of oil in the liver; second, that from so-called extremely poor livers oil was extracted which was two hundred times more potent than high grade cod-liver oil and far more potent than any high grade oil heretofore assayed. He also concluded that oils from livers from individual cod may vary one thousand times in their antirachitic value.

The largest amount of cod-liver oil consumed in this country comes from Norway. The fish are caught in the winter when they are the largest and give most oil. Most of the Norwegian oil comes from either the Lofoten or Isdahl plants. This oil, to a large degree, is prepared by the rotting process. Recently several of the American companies have established factories for the manufacture of cod-liver oil from fish caught off the Newfoundland coast. This is reported to be of higher potency than the Norwegian oil.

Irradiation of food and animal tissues by ultraviolet light was found to induce and maintain normal growth and resulted in an increase in the ash content of the skeleton. Since Steenbock's original discovery, Hess[4] and coworkers have confirmed and greatly augmented the research on this subject. A careful review of the literature has recently been published by Karelitz[5]. There is a question at present as to the dosage of irradiated ergosterol and as to the length of time it may be safely given. The recent addition of a cod-liver oil fortified with irradiated ergosterol, and the fact that a solution of the latter drug will soon be on the market, brings these questions to us at this time for serious consideration.

Vitamin D content can be increased by irradiating cholesterol and ergosterol, many foods and human tissue by the ultraviolet light. Peculiarly enough, irradiation of cod-liver oil renders it less potent. Proof of the effectiveness of irradiated sterols has been conclusively furnished by the research of Hess[4], Gyorgy[6], Drummond[7], Hottinger[8] and other authors. Ergosterol may be isolated from mushrooms, ergot and yeast, which are the chief sources. In the pure state 0.00001 mg. of activated ergosterol prevents rickets in rats. It is activated

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by irradiation for one-half hour with the quartz lamp or the magnesium spark. It is of no antirachitic value unless irradiated. The greatest activity occurs after twelve hours, longer exposures seeming to decrease the potency.

CERTAIN FACTORS DEFINITELY KNOWN ABOUT ACTIVATED ERGOSTEROL

Potency. The potency is twenty thousand times that of cod-liver oil. One mg. of pure ergosterol equals 20 grams (5 teaspoons) of cod-liver oil.

Toxicity. This is approximately 1,000 times the prophylactic dose. An overdose may be dangerous. Kreitmair and Moll[9] showed rich layers of calcium in the walls of blood vessels, heart, muscles, stomach, lungs, kidney and spleen in animals fed toxic doses. There is also a high blood calcium and phosphorus. This is not likely with doses necessary to prevent or cure rickets. Doses two hundred times greater are needed to produce toxic result. To date no deaths of infants have been reported, although animals may be killed by large doses of the pure ergosterol.

Recently Klein[10] fed rats 20,000 times the therapeutic dose and produced anorexia, loss of weight and impairment of physical condition and rate of growth. The blood calcium was 50 per cent greater. This allows extreme limit in using the dosage that we ordinarily prescribe. Apparently there is a cumulative action of ergosterol, as a single large dose has been known to cure animals having rickets, proving that they can store it. Karelitz believes that it should not be given after three to six weeks on account of this cumulative action, although it should be resumed after a free interval.

Dosage. Clinically, activated ergosterol is not used in a pure form but in a solution of olive oil, in which it is readily absorbed. Two to 5 mg. daily should be adequate therapeutically and 1 to 3 mg. prophylactically, varying with the size of the child and the degree of rickets. In commercial form 1 mg. equals 1 mimim. Acterol is the name by which the Mead-Johnson Co. will soon market this product.

A modification of the above preparation called fortified cod-liver oil (Super D Upjohn) is made by the addition of 1 per cent of irradiated cholesterol or ergosterol to a high grade Norwegian cod-liver oil (Lofoten). The dose of the activated sterol in the Super D is 1/160 of the nontoxic dose for a white rat to 1 dram of the fortified cod-liver oil. There are 4 gm. to 100 gal., or .05 mg. per oz. This is an exceedingly harmless amount in the light of our present knowledge.

This oil has 10,000 to 15,000 antirachitic vitamin units per ounce as determined by the McCollum line test. This is about five times as much as contained in the highest grade Lofoten Norwegian cod-liver oil, which averages about 2,000 vitamin D units. This figure has been verified by several laboratories in this country.

Vitamin D is best absorbed when given in an absorbable oil and is ineffective when its fractions are administered without oil. The quantity of irradiated ergosterol in Super D oil is so small that the dose does not have to be cut below that of ordinary cod-liver oil to make it safe. With infants unable to tolerate large doses of cod-liver oil, one-fifth of the usual dose of Super D oil should still give protection. Vitamin A in the mixture supposedly increases the immunity to respiratory infections and antixerophthalmias. From the above, it is only logical that doses such as are commonly given, when using pure cod-liver oil, may be safely used with this "spiked" mixture.

The author has studied thirty infants from one to six months of age who have been taking an average of two teaspoonfuls of Super D oil to three months of age and later averaging three teaspoonfuls daily. Examination, including x-ray plates, shows normal development in every respect. Both breast and bottle fed babies received these amounts routinely.

I wish briefly to call your attention to the directions for use, printed on each bottle of cod-liver oil of the six most popular brands, to demonstrate the fact that the different companies, having oils of varying potency, show marked discrepancies in the doses which are suggested. The physician who knows the infant's physical condition should advise the necessary dose (chart I).

All of the six oils are definitely standardized by their own choice of tests. Five of the six state definitely the number of vitamin D units in each bottle of oil. The sixth may vary, as far as we may judge. The dosage recommended is highest for the oils which seem to be the most potent. Apparently there is quite a misunderstanding as to what is a rickets preventive and curative dose. The least potent oils suggest the smallest doses. This may be one reason why many babies develop rachitic symptoms while taking cod-liver oil.

Emulsions and extracts. Cod-liver oil is combined with many emulsions and malt extracts. The

CHART I

NAME	DESCRIPTION	DOSE
I. Super D Upjohn.	Vitamin A approximately ten times the U. S. P. requirements. Vitamin D is five times the vitamin D in pure high grade cod-liver oil. About 15,000 vitamin units per ounce.	¼ to 1 teaspoonful three times daily as directed by the physician.
II. Squibbs. Small Bottle.	Standardized. Unusually high vitamin A content. Also rich in antirachitic factors.	¼ to 1 teaspoonful.
Large Bottle.	Vitamin A. 50,000 U. S. P. units in each 100 grams. Vitamin D. Physiologic test shows this oil to be exceedingly rich in Rickets-preventing factor vitamin D.	
III. Mead-Johnson.	Standardized. Biologically assayed for antirachitic vitamin D and antixersphthalmia vitamin A. (Literature states 3000 vitamin D units.) Standardized.	Suggested doses. (Contained only in physician's sample.) Up to 1 mo. 1 teaspoonful twice daily. 1 to 6 mo., 1 teaspoonful twice daily. 6 mo. to 7 yrs. 1½ teaspoonful twice daily.
IV. Parke-Davis.	Standardized. An ounce equals 13,500 vitamin A units and at least 3000 vitamin D units.	15 drops to ½ teaspoonful three times daily.
V. Norwich.	U. S. P. Certified. Vitamin A—14,000 units per oz. Vitamin D—7,000 units per oz.	½ teaspoonful twice daily at 1 month. 1 teaspoonful at two mo. twice daily. 2 teaspoonfuls twice daily after 5 mo.
VI. Patch.	An ounce contains 25,000 units vitamin A, U. S. P. (This unit is not a measure of antirachitic activity of cod-liver oil.) Vitamin potency guaranteed.	½ teaspoonful three times daily.
Recent Labels.	500 vitamin A units and 75 vitamin D units per gram, or (2350 vitamin D units per ounce).	

amount of oil in these preparations varies from 20 to 35 per cent. On this analysis at least six teaspoonfuls daily are necessary to prevent rickets in an infant. This large dose, as can readily be seen, is far too great for the average infant. Concentrates and powdered or tablet extracts are of no proven value.

Ultra-violet light. Huldschinsky had, in 1919, proven the cure of rickets with the quartz lamp. In 1921, Hess and Unger[11] used the expression "encouraged by our results in curing rickets by means of the ultraviolet ray." He later showed that quartz light must contain ultraviolet rays with a wave length between 280 and 302 milimicrons. Hess and Anderson[12] also demonstrated that the shortest rays in sunlight contained the most ultraviolet light and that the longest rays are found in the December sun. The ultraviolet radiations shorter than those of sunlight are more potent in healing rickets than the effective area of solar rays. In April and May the antirachitic effect of sun ray is eight times that of December and January.

Selkirk advocates a minimum of eleven minutes exposure monthly and suggests one treatment weekly over regular intervals as a prophylactic and cure of rickets. He suggests giving the treatment on both sides of the body and a dosage sufficient to produce a very mild erythema. The dose varies with the type of lamp used.

SUMMARY

1. Several specific substances are available for the treatment of rickets and other conditions involving calcium deficiency. Cod-liver oil varies in potency to a marked degree. Cod-liver oil of known stated potency should be prescribed when its use is desired, in the same manner as any other standard drug.

2. Ultraviolet light can be used as a definite cure for rickets, by stimulating a more rapid absorption of calcium.

3. Activated ergosterol apparently is the most simple means available for the prophylactic and therapeutic dietary treatment of diseases of calcium deficiency.

(Bibliography, omitted for lack of space, will appear in reprints.)

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MAY, 1929

EDITORIAL

DEMORALIZING PROPAGANDA

Several months ago editorial reference was made to the gigantic advertising campaign conducted throughout the country through a great variety of agencies by the manufacturers of Lucky Strike cigarettes, who are spending millions of dollars for this purpose. An advertising bait was cast to all medical journals in the form of a year's contract for a page of advertising. Editors with a due sense for the proprieties, who recognized the vicious and demoralizing character of such advertising, declined to accept the contract. It has been utilized, however, by some medical journals and many other publications, whose clienteles represent many classes of people.

The utilization of the radio for this form of advertising has resulted in a wide-spread protest and a demand that the Federal Radio Commission revoke the licenses of thirty-eight leading stations of the National Broadcasting Company's chain, the demand being sponsored by the National Food Products Protective Committee. These stations include one each in Portland, Seattle and Spokane. It is claimed that the attempt to substitute cigarette smoking for wholesome products is a part of a campaign to transform 20,000,000 boys and girls into cigarette addicts. It is charged that "tainted testimonials" have been secured from professional athletes, football coaches, popular stage and screen heroes, suggesting cigarettes to boys and girls as an aid to athletic prowess, health and beauty. Medical opinion of the country is also being continuously misrepresented. Such testimonials are inherently misleading when they are not deliberately false, because the radio public is not told the alleged recommendations for cigarette and other products are bought and paid for.

It is emphasized that the air is the domain of the people of the United States and stations are licensed to broadcast only upon the basis of public service. As the broadcast voice invades every domicile, speaking alike to men, women and children, the home lies open and helpless to the intrusion of the spoken word broadcast from a radio station. Support of this movement, it has been stated, has been secured from the American Medical Association, National Child Welfare Association, many large church organizations, as well as educational and teachers' associations. Representatives of many churches, child welfare associations, civic and social bodies have volunteered to appear before the Federal Radio Commission and go on record against this vicious propaganda which has stirred up such nation-wide opposition.

GIANTS MADE TO ORDER

It has been customary in recent years for sons to outstrip their fathers in height and weight. The athletes who present unusual height are sought in a variety of physical contests. In business and professional affairs the tall individual is commonly considered as having the advantage over the man of small stature. Apparently the information has become popularized that gigantism results from hypertrophy of the anterior pituitary body. Consequently many observers seem to have grasped the idea that giants can be produced with malice aforethought by administration of preparations from this gland. Recently a daily paper has announced with a flourish of scientific accuracy that a pituitary extract has been perfected by whose administration during boyhood the parents so desiring may develop their offspring into giant proportions. With an air of authority the description proceeds to detail the various heights to which boys and girls may attain by suitable treatment along this line. Nothing is said, however, about the little runt who, having passed adolescence, may conclude he would like to rank among the giants and by the consumption of this mystic preparation may develop the grotesque features of acromegaly with its Frankenstein possibilities. It will not be necessary, however, to exercise undue agitation along this score. Mother Nature is not accustomed lightly to vary her established principles of growth and development. It is not likely that man has yet attained the superwisdom by which to any marked degree he can vary her laws which have prevailed since the origin of man. One will await with interest the future exhibition of these hand-made giants.

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THE ANNUAL OREGON MEETING

The fifty-fifth annual meeting of Oregon State Medical Society will be held at La Grande May 16-18. Eastern Oregon District Medical Society will be hosts. Below appear various announcements and program for the meeting.

HOUSE OF DELEGATES

The House of Delegates will meet at breakfast in the Banquet Room at Sacajawea Inn at 7:30 a.m., on Thursday, May 16, and Friday, May 17. These meetings are open to all members of the Society.

PUBLIC MEETING AND MOTION PICTURE PROGRAM

A public educational meeting will be held at the Arcade Theater at 8:00 p.m., on Thursday, May 16.

The purpose of the meeting will be to show the great progress which has been made by medical science and to urge people to take advantage of the facilities now available for prolonging life and avoiding sickness. A number of motion pictures will also be shown, including the "Life of Pasteur."

Admission to the meeting will be by complimentary ticket only and will be limited to those of sixteen years of age and over. Tickets will be placed in the hands of physicians in La Grande and vicinity one week in advance of the meeting. Tickets may also be secured from club secretaries, ministers, and the various health organizations.

RECREATION

The meeting offers members an exceptional opportunity to enjoy a short vacation in the beautiful Grande Ronde Valley, in which La Grande is so picturesquely situated. Beautiful Wallowa Lake and numerous other smaller lakes, as well as a large number of mountain peaks and streams, will be at their best at the time of the meeting. The country surrounding La Grande is one of the most scenic parts of the Pacific Northwest and attracts large numbers of fishing, hiking and outing parties every year.

A number of one and two day trips for fishermen, hikers and automobilists have been arranged. Experienced guides will be on hand to take fishing parties to mountain streams, where the trout are sure to be biting. Members are requested to write in advance to Dr. Lee B. Bouvy at La Grande, indicating the kind of trip they would like to take and the number who desire to go. Parties of convenient size will then be organized.

ANNUAL BANQUET

The annual banquet of the Society will be held at 7:00 p.m., on Friday, May 17, in the Banquet Room at Sacajawea Inn. There will be music and brief addresses by various men, including Dr. William J. Mayo who will be honor guest.

The banquet will be an informal stag affair, and the charge will be $1.50 per cover. Reservations should be made at the registration desk before the banquet.

GOLF TOURNAMENT

The Third Annual Medical Golf Tournament will be held at La Grande Country Club on Saturday, May 18, at 9:00 a.m. The course is a very sporty one and the equal of any course in the larger cities. The greens and the long, wide fairways will be in such excellent condition as to warm the heart of the most enthusiastic golfer.

The Oregon Medical Golf Trophy, a handsome silver cup, will again be open to competition. The cup is temporarily in the possession of Dr. L. S. Besson of Portland, who won it at the Tournament last year at Portland. Temporary possession of the cup will be transferred to the player with the lowest net score at the tournament this year. Permanent possession will go to the player who registers the lowest net score at three annual tournaments. Prizes will also be awarded for the lowest gross score and second and third lowest gross and net scores. The prizes will be awarded at a luncheon at Sacajawea Inn following the Tournament.

Arrangements for the Tournament are in the hands of Dr. W. P. McAdory of La Grande. Each player must furnish his club handicap, together with the name of his club, par of the course and his five best scores of the season. There will be a nominal entrance fee to cover the cost of the prizes.

ANNUAL MEETING OF THE ALUMNI ASSOCIATION, MEDICAL SCHOOL, UNIVERSITY OF OREGON

The annual meeting of the alumni association of the University of Oregon Medical School will be held at a luncheon in the Banquet Room at Sacajawea Inn at 1:00 p.m. on Thursday, May 16. Luncheon reservations should be made at the registration desk on Thursday morning.

WOMAN'S AUXILIARY

The Woman's Auxiliary to the state medical society will meet during the session. The wives of all members are eligible to membership and are cordially invited to attend the various meetings and the complimentary dinner on Friday evening.

The attention of the wives of Eastern Oregon physicians is directed to the organization meeting at 1:30 p.m., on Friday. Auxiliaries to a number of county and district societies have been formed and the officers of the state auxiliary are very anxious to see organized a Woman's Auxiliary to the Eastern Oregon District Medical Society.

The state auxiliary will meet with the La Grande Neighborhood Club at 4:00 p.m., on Thursday, May 16. As one of the primary purposes of the Auxiliary is to make contacts with lay groups of women, a good representation from the auxiliary should be present. A health educational program will be offered.

The wives of La Grande physicians are planning a number of interesting entertainment features for the visiting ladies. Details will be announced during the meeting. Mrs. Lee B. Bouvy is in charge.

PROGRAM

VISITING SPEAKERS

May 16, 2:00 p.m.

Dr. J. H. Falls, Professor of Obstetrics, University of Illinois College of Medicine, Chicago, Ill., on "Hyperthyroidism Complicating Pregnancy."

May 17, 2:00 p.m.

Dr. William J. Mayo, The Mayo Clinic, Rochester, Minn., on "Cancer Problem."

THURSDAY, MAY 16

Sacajawea Inn

7:30 a.m. Meeting of the House of Delegates.
Breakfast, Banquet Room.

Chieftain Ball Room

9:00-11:00 a.m. Registration.
11:00 a.m. President's Address, Lee B. Bouvy, La Grande.
11:30 a.m. Scientific Session.

1. A Clinical and Pathological Consideration of the Carcinomatous Gastric Ulcer (Lantern Demonstration). W. H. Bueerman, Portland.
2. Routine Roentgenology of the Nasal Sinuses (Lantern Demonstration). Charles E. Palmer, Ontario.
3. The Child Contact with Tuberculosis. S. G. Henricke, Portland.

1:00 p.m. Annual Meeting of the Alumni Association Medical School, University of Oregon, Luncheon Banquet Room.
2:00 p.m. Scientific Session.

1. Hyperthyroidism Complicating Pregnancy (Lantern Demonstration). F. H. Falls, Professor of Obstetrics, University of Illinois College of Medicine, Chicago.
2. Evaluation of Stool Examination in the Diagnosis of Malignancy of the Gastrointestinal Tract (Lantern Demonstration). Willard F. Hollenbeck, Portland.
3. Acute Maxillary Sinusitis. W. Wells Baum, Salem.
4. Antirachitic Potency of Activated Ergosterol. C. Ulysses Moore, Portland.
5. A Menstruating Tract from Uterus to Anterior Abdominal Wall. Report of a Case (Lantern Demonstration). Goodrich C. Schauffler, Portland.
6. Viscero Palingenesis (Lantern Demonstration). J. Christopher O'Day, Honolulu.
7. Motion Picture: The Treatment of Cystocele. Raymond E. Watkins, Portland.

6:30 p.m. Annual Meeting of the Oregon Public Health League.
Dinner, Banquet Room.
8:00 p.m. "Keeping Fit," Arcade Theater.
Public Educational Meeting, Program of Talks and Motion Pictures.

FRIDAY, MAY 17

Sacajawea Inn

7:30 a.m. Meeting of the House of Delegates.
Breakfast, Banquet Room.
9:00 a.m. Scientific Session.

1. Spinal Anaesthesia: Its Technique and Application. A Demonstration. William T. Phy, Hot Lake.
Discussion to be opened by Carl H. Bastron, Portland.
2. End Results of the Use of the High Carbohydrate Diet in Diabetes Mellitus (Lantern Demonstration). Blair Holcomb and David W. Baird, Portland.
3. Coincidence of Acute Appendicitis and Infected Tonsils. Expediency of Simultaneous Operations. Warren C. Hunt, Klamath Falls.
4. Modern Obstetrics in the Home. Oliver N. Nisbet, Portland.
5. The Care of Acute Otitis Media. Ira E. Gaston, Portland.
6. The Diagnosis and Principles of Treatment of Common Dermatoses (Lantern Demonstration). Lyle B. Kingery, Portland.
7. Tularemia and Undulant Fever. Jay R. Coffey, Portland.

1:00 p.m. Luncheon of Members of the Society with the La Grande Chamber of Commerce, Banquet Room.

Chieftain Ball Room

2:00 p.m. Business Session and Election of Officers.
3:00 p.m. Scientific Session.

1. The Cancer Problem. William J. Mayo, Rochester, Minn.
2. Principles of Treatment of Fractures of the Ankle (Lantern Demonstration). Otis F. Akin, Portland.
3. Inguinal Hernia. The Clinical Application of Experimental Studies (Lantern Demonstration). Millard S. Rosenblatt, Portland.
4. Physiological Variation in Blood Pressure. Charles P. Wilson, Portland.
5. The Relationship of Hepatitis to Gallbladder Disease (Lantern Demonstration). J. Earl Else, Portland.
6. Showing of the Harvey Film.

7:00 p.m. Annual Banquet. Banquet Room. Informal.

SATURDAY, MAY 18

9:00 p.m. Third Annual Oregon Medical Golf Tournament. La Grande Country Club. Automobiles will leave from Sacajawea Inn.
1:00 p.m. Luncheon and Awarding of Golf Prizes. Sacajawea Inn.
Fishing, hiking, and automboile trips throughout the day and on Sunday, May 19.

PROGRAM OF WOMAN'S AUXILIARY

Headquarters: Mezzanine Floor, Sacajawea Inn

THURSDAY, MAY 16

9:00 a.m. Registration.
4:00 p.m. Meeting with La Grande Neighborhood Club. Educational Program.
8:00 p.m. "Keeping Fit," Arcade Theater.
Public educational meeting. Program of talks and motion pictures.

Friday, May 17

10:00 a.m. Annual Meeting of Auxiliary to the State Medical Society.
1:30 p.m. Organization of Auxiliary to the Eastern Oregon District Medical Society.
3:00 p.m. Entertainment for visiting ladies. To be announced at meeting. In charge of Mrs. Lee B. Bouvy.
6:30 p.m. Annual Dinner. Compliments of the State Medical Society.

Saturday, May 18

Recreation, hiking and automobile trips.

MEDICAL NOTES

BRING YOUR GOLF CLUBS TO PORTLAND IN JULY

Physicians of the Pacific Northwest, who make golf their chief avocation, will have an additional stimulus to attend the meeting of the American Medical Association at Portland in July. The Rose City is probably better provided with golf courses than any other city of its size in the country. One or two rank with the best to be found anywhere and have a variety of hazards which will warm the heart of the most ardent devotee of the Scotch game. There are eight private courses and ten of the pay-as-you-play type, so that visiting golfers will be able to get on a good course at any time during the meeting.

The main golf event of the meeting will be the annual tournament of the American Medical Golf Association on July 8. In accordance with the custom of the association a splendid group of prizes will be offered for the various forms of competition. The annual meeting and dinner of the association will be held at the conclusion of the tournament.

All Fellows of the American Medical Association are eligible to membership in the American Medical Golf Association and every Fellow is urged to affiliate with the golf association, whether he intends to compete in the tournament or not. Membership blanks and entrance blanks for the tournament can be secured from the secretary of the Local Golf Committee, Dr. E. W. St. Pierre, Stevens Building, Portland. He will be glad to furnish any information regarding the association and the tournament. Bulletins will be issued from time to time to inform physicians regarding the golf activities.

The American Otolaryngology Board will hold an examination at the Multnomah County Hospital in Portland on Monday, July 8. Its last meeting in this section was at Spokane in the summer of 1927. Possession of a certificate from this board is required for membership in the Pacific Coast society, as in all other national societies in otolaryngology. It is desirable for specialists wishing to secure this coveted certificate to enroll themselves as soon as possible. The secretary of the board is Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

American Proctologic Society will hold its annual meeting at Detroit, May 13-15. Any recognized graduate physician interested in proctology is eligible for election as associate member. Applicants for fellowship must have limited their practice to this specialty for at least seven years and as a rule must be members of the American College of Surgeons.

The American Association for the Study of Allergy will hold its next annual meeting in Portland, Monday and Tuesday, July 8-9, in connection with the meeting of the American Medical Association. Further information may be obtained from the secretary, Warren T. Vaughn, Medical Arts Bldg., Richmond, Va.

OREGON

Changes in Faculty. The following changes in faculty at the University of Oregon Medical School were recently authorized by the Board of Regents: Resignation of Dr. Robert L. Benson, Professor of Pathology and Head of the Department, accepted; Dr. Frank R. Menne, Professor of Pathology, appointed Head of the Department; change in title of Dr. Edwin E. Osgood from Assistant in Medicine to Associate Professor of Medicine, approved; change in title of Dr. Wesley E. Gatewood from Clinical Instructor to Assistant Clinical Professor of Medicine, approved; Miss Grace Phelps, Superintendent of the Doernbecher Memorial Hospital for Children, appointed Director of Nursing of the University of Oregon Medical School.

Social Hygiene Work Endowed. The Oregon Social Hygiene Society has been assured the yearly sum of $5000 by the generosity of Dr. E. C. Brown, retired Portland physician. He has long been interested in the education of the citizens of Oregon along the lines of social hygiene, and his permanent endowment is expected to be of great assistance in carrying on this work.

Tuberculosis Campaign Held. As part of a nation-wide movement, the Oregon Tuberculosis Association sponsored a state-wide "early discovery" campaign during the month of April. Free clinics for chest examination were held at several centers by specialists in tuberculosis.

Authority on Asthma Lectures. Dr. Edward Matzger of San Francisco, Calif., one of the foremost authorities on allergic diseases on the Pacific Coast, visited Eugene last month. While there he was the guest of Eugene physicians and members of the faculty of the department of botany at the University of Oregon. He delivered an address on the subject of allergy.

Dr. Richard B. Dillehunt, Dean of the University of Oregon Medical School, is to leave soon to visit new Outpatient Clinic buildings at middle western and eastern universities to obtain ideas upon their construction, organization and operation for planning the new building to be constructed on the Medical School campus.

Dr. V. R. Abraham, who has been engaged in practice at Hood River for the past sixteen years, recently moved to Palo Alto, Calif., where he will become chief of the surgical clinic maintained there by the United States Veterans' Bureau.

Dr. I. U. Temple has returned to Pendleton and has reentered the practice of medicine after an absence of several years.

Dr. B. O. Wood of Portland suffered a comminuted fracture of the arm March 28, when the automobile which he was driving skidded into a ditch on the Pacific highway near Salem.

Physician Honored. Dr. John H. Besson of Portland, who has been engaged in postgraduate study in Vienna for the past several months, was recently elected vice-president of the American Medical Association in that city.

Dr. George Smith, formerly of Pilot Rock, has moved to Arlington.

Dr. Calvin S. White, veteran Portland physician, has been confined by a severe illness at Good Samaritan Hospital.

Klamath and Lake County Medical Society held a meeting April 5 at the home of Dr. George I. Wright at Klamath Falls. Among those who participated in the scientific discussion were Drs. J. R. Barr, G. Adler and F. C. Adams.

Portland City and County Medical Society met in the auditorium of the Medical-Dental Building April 3. Dr. Raymond E. Watkins read a paper on, "Hydatidiform Mole Chorioepithelioma with Case Reports." Dr. Herbert L. Foskett described the organization of a clinic pathologic conference.

St. Mary's Hospital at Astoria, at its regular monthly meeting April 10, was addressed by Dr. Sam Slocum of Portland.

Portland City and County Medical Society. Drs. R. A. Fenton, F. B. Kistner and R. F. Davis were the speakers at the meeting of the Portland City and County Medical Society, April 15.

WASHINGTON

Capacity of Hospital Taxed. Dr. Burton A. Brown, superintendent of the Pierce County Hospital at Tacoma, is credited with the recent statement that the institution is now entirely filled and there is a waiting list of prospective patients. This is in spite of the fact that the hospital was recently enlarged. The present difficulty, however, is said to be partly due to the fact that funds have not been available for the completion of the upper floor in the new building.

Professional Building Planned. Construction is expected to begin in the near future on a $60,000 combined store and professional office building in Wenatchee. The structure, which will be erected at the corner of Palouse and Mission Streets, and will be occupied by Drs. R. T. Congdon, J. E. Gahringer and associates.

Health Officer Appointed. Dr. A. J. Osterman of Mt. Vernon has been appointed county physician and health officer of Skagit County to succeed Dr. George Shorkley, who has resigned.

Dr. H. H. Skinner of Yakima sailed from Seattle April 6 on a trip around the world. After spending a short time in Japan he expects to proceed through China and Siberia to Eastern Europe, where he will engage in postgraduate work.

Physician Acquitted. Last month Dr. Royal B. Tracy of Seattle was acquitted by jury of a charge of manslaughter. He was charged with this crime, following the death of a young woman to whom aqua ammonia by mistake for aromatic spirits of ammonia had been given. Evidence showed that the patient died from alcoholism and the jury did not hold the doctor responsible for the fatality.

War Veterans' Hospital Planned. The Washington State Legislature, at its last regular session, passed a bill allowing $150,000 for the construction of a hospital at the Washington Veterans' Home at Retsil.

Hospital Addition Planned. The board of directors of the Deaconess Hospital in Spokane at a recent meeting authorized the immediate construction of a five story addition to the hospital. The new unit will provide facilities for fifty additional patients.

Lewis County Medical Society held its regular monthly meeting in Centralia April 8. A paper on "Nonoperative Treatment of Fracture of the Middle-third of the Femur," was read by Dr. H. Y. Bell.

IDAHO

Health Official is Visitor. Dr. L. D. Fricks, of Seattle, Wash., director of the United States Public Health Service for the sixth district, was a recent visitor at Twin Falls, where he assisted in the work of controlling the meningitis epidemic in that locality.

Health Board Named. Mr. Fred E. Lukens, commissioner of law enforcement, has announced the appointment of members of the board of medical examiners for the current year. Those reappointed are Drs. F. W. Almond, Boise, and C. F. Hammer, Salem. New members include Drs. C. C. Conant, Weiser; H. W. Clouchek, Twin Falls; Charles O. Moore, Paris.

Memorial Hospital Opened. The new General Memorial Hospital at Preston was opened early in April. It is a two story fireproof building, designed to accommodate sixteen patients, and is equipped with a surgery and x-ray plant.

Hospital at Hailey. Dr. E. W. Fox of Hailey has recently opened a small private hospital in that town. The institution occupies the second floor of the Fox Building and will provide accommodations for sixteen patients.

New Hospital at Preston. The General Memorial Hospital at Preston was opened to the public April 1.

Dr. H. E. Lamb of Twin Falls sailed from New York recently for a trip to Europe. He expects to spend the most of his time in postgraduate study in Vienna.

Dr. I. R. Egbert, formerly of Shelby, has located for practice at Arco.

Weddings. Dr. Albert J. Coats of Boise and Miss Elizabeth D. Funke of Salt Lake City, Utah, were married in Boise March 22. Dr. Frank Willis Almond of Boise and Miss Florence Maye Hardesty, formerly of Jennings, Kan., were married in Boise March 17.

OBITUARIES

Dr. Herman Prince Marshall, Spokane, Wash., died at the Sacred Heart Hospital March 31, following a cardiac attack of only a few hours duration, aged 47 years. He was born at Antigonish, Nova Scotia, in 1882, and was graduated from Harvard University Medical School, in 1904. He located in Spokane soon afterward and established a large surgical practice there. He was active in medical affairs, having served as regional counselor of the American College of Surgeons, president of the Spokane County Medical Society and president of the Washington State Medical Association.

Dr. E. A. Stafford, pioneer physician of Snohomish, Wash., died at his home March 12, following a brief illness, aged 70 years. He was born at Crawfordsville, Ind., in 1859, and graduated from Rush Medical College, Chicago, in 1888. The following year he settled at Sumner, Wash., where he remained three years. He then moved to Snohomish and practiced there thirty-seven years. He was city physician at the time of his death.

Dr. Alva D. Walker, Portland, Ore., died at his home March 30, following an illness of ten days' duration, aged 75 years. He was born in Winchester, Ind., in 1854, and graduated from Washington University School of Medicine, St. Louis, Mo., in 1881. After practicing for several years in Girard, Kan., he moved to Portland, where he remained in active practice until the time of his last illness.

Dr. Frederica Phillips, Seattle, Wash., died at her home March 31, following a long illness, aged 54 years. She was a graduate of University of Nebraska College of Medicine in the class of 1898. She had been engaged in practice in Seattle since 1902.

Dr. Theodore John Malmgren, Phoenix, Ore., died suddenly at his home April 3, aged 58 years. He was born in Union County, S. Dak., in 1871, and graduated from the State University of Iowa College of Medicine, Iowa City, Iowa, in 1907. He had been a resident of Phoenix for the past fifteen years.

Dr. Irving Judson Pond, Glenns Ferry, Ida., was found dead in bed at his home April 4. He was born in 1881 and graduated from Hahnemann Medical College and Hospital, Philadelphia, in 1903. He had practiced in Glenns Ferry since 1919 with the exception of two years when he was located at Montesano, Wash.

Dr. John H. Montgomery, formerly of Portland, Ore., died at his home in Vancouver, Wash., April 12, aged 63 years. He was born in Ohio in 1866, and graduated from Columbus Medical School in 1891. He located at Portland in 1892 and was one of the first specialists there in diseases of the eye, ear, nose and throat. He retired from practice in 1919.

Dr. John T. Wolf, Seattle, Wash., died at his home March 30, aged 54 years. He was born in 1875, and graduated from the St. Louis School of Medicine, St. Louis, Mo., in 1905. After practicing for eighteen years at Butte, Mont., he moved to Seattle in 1923. Although suffering from ill health he continued in practice up to the time of his death.

REPORTS OF SOCIETY MEETINGS

KING COUNTY MEDICAL SOCIETY

Pres., B. T. King; Secty., H. L. Goss

A general meeting of King County Medical Society was held in the Auditorium of the Medical-Dental Building, Seattle, April 1, with President King in the chair. About one hundred members were present. Minutes of the general meeting of March 4 were read and approved.

Professor F. A. Osborn of the University of Washington presented a paper on "Sources of Visible and Infrared Radiation for Deep Therapy." This was a resume of a paper by Dr. Luckiesh of the Nela Park Laboratory of Cincinnati. He described the qualities of ultraviolet as compared with infrared, relative to their varying wave lengths. He discussed the transmission of visible and infrared radiations into the human body, stating that the same relative transmission for these radiations exists in water and the human body. The general conclusion drawn from the work under discussion is that a clear globe of 500 to 1000 watt tungsten lamp is the best source of infrared radiations for deep heat therapy.

In discussion, Dr. C. A. Smith questioned the similarity between water and the human body for the penetration of infrared, due to the circulating blood carrying off the heat and forming only a slight penetration. In comparing different sources of radiant heat he stated that convective heat is the most efficient. Dr. Paschall asked if dye in the solution would cut out radiation. Professor Osborn replied this result would follow to a slight extent.

Dr. Friedman, chairman of the Welfare Committee, announced its plans for raising a fund by subscription from the members, the same to be payable within three years.

Dr. W. Kent Ruble was elected to membership. Applications for membership were received from Drs. Herman Behla and Earl W. Converse.

PIERCE COUNTY MEDICAL SOCIETY

Pres., W. G. Cameron; Secty., W. B. Penney

The regular meeting of the Pierce County Medical Society was held in its rooms in the Washington Building, Tacoma, April 9, Dr. W. G. Cameron in the chair. Minutes of the previous meeting read and approved.

PROGRAM

"The Patient and Hospital Expense," Dr. E. A. Rich. He gave an outline of the cost per patient per day to the hospital and the cost to patient of room and board in the Tacoma General, St. Joseph's, Northern Pacific and Pierce County hospitals.

"The Cost of Medical Care," Dr. A. G. Nace.

"A Resume of the Public Health Education Program," Dr. C. C. Leaverton. He stated that the Publicity Committee of the society was working out a program for the society to enter on a definite educational program in the county. He also explained the present educational work being carried on by the Gorgas Memorial Institute and the Public Health League of the State of Washington.

These papers were discussed generally by the members present.

SKAGIT COUNTY MEDICAL SOCIETY

Pres., Austin Shaw; Secty., S. B. Brooks

Skagit County Medical Society held a meeting at Anacortes, April 12. About twenty members were in attendance.

The meeting was largely devoted to discussion of business. It was voted to create a legislative committee composed of members from various towns in the county. S. W. Holton, Sedro-Woolley, was made chairman of the committee, the other members being George Shorkley, Mt. Vernon; W. N. Hunt, Burlington; S. G. Brooks, Anacortes.

Arrangements were made for a Tri-County meeting of physicians from Snohomish, Whatcom and Skagit counties to be held in Everett, June 4.

The following officers were leected for the ensuing year: President, H. Thornton D'Arc, Mt. Vernon; secretary, George Shorkley, Mt. Vernon.

SNOHOMISH COUNTY MEDICAL SOCIETY

Pres., H. R. Secoy; Secty., A. B. Murphy

Snohomish County Medical Society met in the Medical and Dental Building, Everett, April 2.

A paper was presented by Dr. Russell Townsend on "Repeated Attacks of Anaphylaxis Following Injection of Horse Serum."

Dr. W. Ray Jones of Seattle discussed "The Venereal Situation in Washington."

Dr. L. H. Jacobson, also of Seattle, spoke on "The Advantages of Reporting Venereal Diseases."

"Lessons in Anatomy" was the topic of Dr. William V. Fulton.

SPOKANE COUNTY MEDICAL SOCIETY

Pres., Carroll Smith; Secty., R. M. Schulte

Spokane County Medical Society held its regular meeting April 10 at the University Club, Spokane. There were about seventy-five members present at the dinner, with many out of town representatives.

Dr. George Swift of Seattle read a very interesting paper on "Intracranial Injuries and Aftertreatment." He had several slides showing th edifferent types of lesions. He also discussed the work of the American College of Surgeons in the standardization of hospitals.

Dr. Charles B. Ward presented his moving picture on "Epitheliomas of the Lip," showing pictures of the lesions before treatment and the satisfactory result following the use of x-ray and radium therapy.

The society elected to membership Drs. E. L. Spohn, Priest River, Ida., Wendell Sweet, Ritzville, and Robert P. DeReimer, Spokane.

WALLA WALLA VALLEY MEDICAL SOCIETY

Pres., J. T. Rooks; Secty., C. J. Johanneson

Walla Walla Valley Medical Society held a regular meeting in Walla Walla, April 10. Dr. F. H. Brush of Yakima, president of the state association, was a visitor, as well as physicians from Pasco, Kennewick and Dayton.

Dr. G. W. Swift, Seattle, gave an address on "Aftertreatment of Craniocerebral Injuries," illustrated with lantern slides.

Dr. J. W. Mounsey, Spokane, read a paper on "Internal Hemorrhoids." The paper received general discussion.

Dr. J. Edward Preucel, Colfax, read a paper on "Acidosis."

It was agreed that this was one of the best attended and most successful meetings of the society.

WHATCOM COUNTY MEDICAL SOCIETY

Pres., J. R. Morrison; Secty., Charles Teal

Whatcom County Medical Society, at a meeting in Bellingham April 1, was addressed by Dr. I. H. Moore of Seattle. He spoke upon the subject of "Colon Disorders."

Dr. L. L. Stephens, also of Seattle, discussed the use of "Radium and X-ray in the Treatment of Cancer."

POCATELLO MEDICAL SOCIETY

Pres., H. C. Irwin; Secty., D. C. Ray

Pocatello Medical Society met at Pocatello April 4. Dr. J. Earl Else of Portland, Ore., was the guest of honor and spoke on "Infections of the Gallbladder."

Dr. Alexander Davis of Kimberly, secretary of the Idaho State Medical Association, told of plans for the state medical convention at Lewiston July 5-6.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

An Index of Symptomatology. By Various Writers. Edited by H. Letherby Tidy, M.A., M.D. Oxon. F.R.C.P. Assistant Physician, St. Thomas Hospital, Consulting Surgeon, Royal Northern Hospital, London. 130 Illustrations, some in color. Cloth. 710 pp. $12.00. William Wood and Co. New York, 1929.

This is a companion book to Index of Differential Diagnosis by French, the best work on the subject in the English language. The precise kind of book this is, as described by the above title, may naturally be somewhat nebulous in the reader's mind. The writer says in his preface, "This book is intended to provide an account of the symptomatology of diseases. The general object has been to give a clear and reasonably full description of the clinical manifestations of each disease, without dwelling unduly on minor complications and variations."

One might question the value of such a work, when we have a host of textbooks on theory and practce that do the same and much more. This was what the reviewer thought, but on looking over the present volume he is of the opinion that it is well worthwhile. The reasons for this are that the work covers all the branches of medicine, surgery, gynecology and the various specialties; the subjects are arranged in alphabetical order in the text, but chiefly because of the very high quality of the contributions by twenty-six of the leading medical men in Great Britain.

It must be conceded that the preliminary classical and general training of our English medical cousins is much superior to our own, and one of the characteristics of a master of any art is simplicity. For this reason the English medical works are usually couched in much simpler and more direct language than are American. The editor, who is also the chief contributor, has managed to secure great uniformity in the contributions of the various writers as to style and presentation of the many subjects. Each topic is treated with sufficient comprehensiveness and yet the main object has been to give a clear concise clinical description so as to leave a perfect picture in the mind. It is, in fact, admirably written.

If one cannot turn at once to a desired subject by following the alphabetical order of the pages, there is an excellent index in the back of the book with all important matters in heavy type. Turning at random to the subject first striking the eye, we come to extrauterine pregnancy. There is first a beautiful pathologic description of the clinical varieties of tubal rupture and abortion, with different symptoms according to the different pathology. Thus, with erosion of the tube toward the mucosa we have a subacute or chronic type with repeated attacks of pain and slight bleeding; the blood leaking out through the unruptured tube forms a pelvic hematocele; while with erosion of the tube toward the peritoneum we observe rupture of the tube, agonizing pain and free hemorrhage into the abdominal cavity. Cases with atypical symptoms are described and difficulties in differential diagnosis. Thus, in intrauterine abortion it is stated there is much bleeding and little pain, whereas in tubal abortion the pain is severe and the bleeding slight. Agonizing pain from a ruptured tube may be only felt in the shoulder and breast of the affected side, it is pointed out.

The work is well up-to-date. We find an excellent account of undulant fever but none of tularemia or agranulocytic angina which have excited so much interest in this country latterly. But the object of this work is not to describe rareties but to furnish an authoritative and admirable account of all medical and surgical diseases, including the specialties. With this book and the Index of Differential Diagnosis the doctor would nearly possess a medical library.

Winslow.

Recent Advances in Psychiatry. By Henry Divine, O.B.E., M.D., B.S. (Lond.), M.D. (Bristol), F.R.C.P. (Lond.) Medical Superintendent, Holloway Sanatorium, Virginia Water, etc. 340 pp. $3.50. Blakiston's Sons & Co., Philadelphia, 1929.

Much of this book is a review of psychiatric literature, in which the author has been generous in his references to writers in this country. Like most medical books by English authors, the volume is well written. The author has endeavored to give an impartial evaluation of the etiologic factors of the psychoses. The possible effect of chronic infections and intoxications of the parents upon the germ-plasm of the offspring is discussed in Part I, and well sustained by an admirable review of the experiments of Féré and others.

The chapter on psychoses and somatic disease contains an excellent description of the mental changes following encephalitis. An especially fine chapter is one on the behaviour of the organism in mental disorders, wherein the writer gives a summary of recent laboratory research in connection with the psychoses. Cotton's theory of the toxic origin of the psychoses is featured, and apparently taken more seriously by the author than by most psychiatrists in this country.

Malarial therapy in general paralysis is described with details as to administration and results of the treatment. The psychiatrist will find much of interest, but the psychotherapeutist will probably feel somewhat slighted.

The book ends with a plea for the affiliation of mental and general hospitals, that such interrelationship may wipe out any remainnig isolation between psychiatry and general medicine. This volume should be read by everyone interested in mental medicine.

Price.

Spinal Anesthesia (Subarachnoid Radicular Conduction Block). Principles and Technique. By Charles H. Evans, M.D., Clinical Assistant, N. Y. Post-Graduate Medical School and Hospital, etc. Introduction by W. Wayne Babcock, M.D., F.A.C.S. Foreword by Charles Gordon Heyd, M.D., F.A.C.S. Forty-one Illustrations, Three in Color and One Folding Colored Plate. $5.50. Paul B. Hoeber, Inc., New York, 1929.

The use of spinal anesthesia is no longer in the hands of the enthusiastic few but has become general. Therefore a monograph, which presents our present knowledge in concise form and attempts to standardize this procedure is timely. This work covers every phase of spinal anesthesia, including the indications and selection of patients, technic of administration with formulas for estimating proper dosage and methods of controlling the location and intensity of the anesthesia, and an evaluation of the various drugs used, preanesthetic medication, phenomena accompanying anesthesia and the possible complications. Detailed instructions are given for the care of the patient before, during and after operation. Analysis of possible causes of failure and a summary of the present status of this type of anesthesia with opinions from various surgeons conclude the book.

It is noted that the author objects to the rather general use of ephedrine preoperatively to maintain blood pressure. He enumerates his reasons for his preference for adrenalin. The arrangement of the subject matter is rather confusing and there is unnecessary repetition. However, these are minor faults, which are overshadowed by the value of this monograph to anyone doing surgery.

Hepler.

Blood. A Study in General Physiology. By Lawrence J. Henderson, Professor of Biological Chemistry in Harvard University. 397 pp. Yale University Press, New Haven, 1928.

This volume appears as an expanded form of lectures delivered by the author in the annual Silliman Memorial Lectures. It is difficult to review this book from the standpoint of a physician. An estimation of its worth could be made only by a very mathematically inclined physiologist. It is so full of formulae and logarithms that it makes very difficult reading for the ordinary physician. If one has a problem concerning the physiology of the blood upon which he has developed considerable knowledge, he will probably be aided by the study of this volume and the expenditure of much arduous effort. Different chapters among other matters deal with general physiology, components and functions, cells and plasma, the respiratory cycle, blood and circulation, circulatory adaptations. It is a very technical volume and furnishes considerable ponderous reading.

Cefalu.

The Technic of Local Anesthesia. By Arthur E. Hertzler, A.M., M.D., Ph.D., LL.D., F.A.C.S. Professor of Surgery in the University of Kansas, etc. Fourth Edition, with 146 illustrations, 284 pp. $6.00. The C. V. Mosby Company, St. Louis, 1928.

This edition, like the preceding ones, aims to demonstrate not what operations can be done under local anesthesia, but which can best be so done. Since the planning of the operation is more difficult than the technic of anesthesia, the author aims to present the difficulties likely to be encountered in order that one can determine whether or not his experience warrants the undertaking. There are chapters on drugs employed and technic of administration. Then operations of different parts of the body are taken up in routine, the technic of local anesthesia being presented with each, accompanied by numerous illustrations which make the steps perfectly clear to one contemplating a given operation.

Tuberculosis and How to Combat It. (A Book for the Patient.) By Francis M. Pottenger, A.M., M.D., LL.D., F.A.C.P., Monrovia, Calif. Second Edition, 275 pp. $2.00. The C. V. Mosby Company, St. Louis, 1928.

Tuberculosis is typically a disease in which improvement is conditioned upon cooperation between patient and physician. Therefore, this result is rendered more probable in accordance with the information concerning the disease which the physician imparts to his patient. This volume is one of the best of those prepared for this purpose. Different chapters deal with the many conditions of body and sanitation which the patient should know in order to promote recovery. This edition is practically the same as the first with one short new chapter, "The will to get well." Any physician can safely recommend this book to his tuberculosis patients.

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Blood and Urine Chemistry. By R. B. Gradwohl, M.D., Director of the Gradwohl Labroatories, St. Louis, Mo., and Ida E. Gradwohl, A.B., Instructor in the Gradwohl School of Laboratory Technic, St. Louis. With 117 Illustrations and 4 Color Plates. 542 pp. $10.00. The C. V. Mosby Company, St. Louis, Mo., 1928.

The authors state that this volume presents methods that are standard and up to date. There is hardly a specialty in medicine in which these methods are not of importance in arriving at a diagnosis. They touch upon the integrity of kidney and liver function, internal glandular secretory activity, operative risks and all that goes with metabolic function and dysfunction. Part I deals with technic of blood chemistry, in which are chapters outlining all the details of this kind of work. Part II covers chemistry of urine. Part III considers interpretation of blood findings. Part IV discusses basal metabolism. Abundant illustrations represent the various forms of apparatus necessary for this work. The book gives technic in simple style, calculations in their proper forms and a full explanation of apparatus required in various tests. This is a useful volume for the practitioner dealing with blood and urine chemistry.

The Writing of Medical Papers. By Maud H. Mellish-Wilson, Editor of the Mayo Clinic Publications. Third Edition, Revised. 12 mo. of 184 pp. Philadelphia and London. W. B. Saunders Company, 1929. Cloth. $1.50 net.

This booklet has become standard as authority for the writing of medical papers. One who is unaccustomed to writing and uncertain as to style, use of words, punctuation, etc. will find herein many useful suggestions. The author very wisely advises that one should avoid the coining of new words and bizarre terms or expressions.. There are hints as to incorrect grammatical expressions, which might be well taken to heart by a large proportion of the medical profession who record their views in the current medical literature. The advice should particularly be noted that a paper should be brief and clear, eliminating the non-essentials. The volume can be highly recommended.

The Medical Clinics of North America (Issued serially, one number every other month). Volume 12, No. 5. (Southern Interurban Clinical Club Number.) Octavo of 306 pages with 40 illustrations. Per Clinic year, July, 1928, to May, 1929, Paper, $12.00, Cloth 16.00 net. Philadelphia and London: W. B. Saunders Company, March, 1929.

The opening clinical report is by Bass, on pellagra. He describes three cases that have come under his treatment. He thinks the reason for the development of many cases in insane hospitals may be that the mental condition was caused by the general disease pellagra, which had not been recognized by the attending physician. He believes the cause is an infection of some sort and that its specific cure will some day be found. Johns writes on the treatment of amebiasis, with special reference to the use of iodo-oxy-quinolin sulphonic acid, whose trade name is anayodin. While accepting the benefits from other remedies, he thinks this is a most valuable specific and one that is apparently nontoxic. Although this disease is almost as frequent in the northern climates as in the tropics, yet for some reason which is not paralleled in other tropical protozoan diseases the amebae do not seem to be localized in sufficient numbers in the lower sigmoid or rectum to produce typical amebic dysentery. Lemann offers the details of a case of bronchial polyp associated with mediastinal mass, illustrating the great advances of modern roentgenologic, endobronchial, and endoesophageal diagnostic methods. The patient complained primarily of retrosternal pain, proved by fluoroscopic and roentgenologic examination to be due to a mass in the mediastinum. Bronchoscopic examination revealed a polyp and it was suggested that the mediastinal mass represented an agglomeration of lymph-nodes infected from the polyp.

The Surgical Clinics of North America. (Issued serially, one number every other month). Volume 9, number 2. (Chicago Number—April 1929) 243 pp. with 70 illustrations. Per Clinic Year (February 1929 to December 1929). Paper $12.00; Cloth, $16.00. Philadelphia and London.

This volume offers clinical reports from many of the best known surgeons of Chicago. Bevan discusses "the acute abdomen," illustrated from a wide personal experience. He places appendicitis as the most common cause of this clinical picture, followed by lesions of the bile tracts, the kidney and ureter, the stomach and duodenum, with the manifold pelvic lesions forming a very large group. Speed discusses ununiting fractures of the neck of the femur. The most common causes of this condition are insufficient callus, insufficient period of immobilization, too early weight bearing, each of which is considered in detail. The discussion is illustrated by many clinical cases. Montgomery considers pseudoappendicitis in children. In the absence of the pathognomonic symptoms of pain and rigidity there may be many other conditions simulating appendicitis. A series of cases are cited to illustrate this fact. Many conditions of varying pathology are presented of abdominal and chest lesions which are interesting and instructive.

Blood Pressure and Respiration. For some time in a few cases of hypertensive disease of the so-called essential type Israel Rappaport, New York (*Journal A. M. A.*, April 6, 1929), has succeeded in maintaining marked reductions of blood levels by deep breathing exercises. A number of hyptertensive patients were poor breathers. They showed what Rappaport terms "the low breathing habit." The features of this phenomenon are a markedly reduced respiratory rate, pulmonary expansion far below the average, and diaphragmatic excursions of a very restricted type, without any evidence of pulmonary disease to account for it. Rappaport found that it was possible to correct this anomaly by a concentrated effort at deep breathing exercises carried out repeatedly, daily, over a period of several months. Considerable increase of spontaneous pulmonary expansion could be obtained in some cases after several weeks of conscientious breathing exercises. Reductions of blood pressure levels—an average of 30 per cent of the pathologic surplus—were thus obtained and maintained, in some of the cases for nearly two years. In some cases it was necessary to interrupt the patient's life work temporarily for the purpose of carrying out a successful regimen. None of the patients have thus far reached the point of normal respiratory expansion or normal blood pressure level. In some of the cases hypoventilation is still a marked feature, though improvement is noticeably progressing. Some of these patients had other symptoms associated with hypertension; especially were gastrointestinal symptoms complained of, all of which yielded promptly to the treatment.

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TREATMENT OF BRONCHIECTASIS*

Leo Eloesser, M.D.
SAN FRANCISCO, CALIF.

Bronchiectasis is a dilatation of the bronchial tree, the end-branches of which run out, not into fine twigs, but into bottles or pouches, or end as cylindrical pipes. The dilatation may be congenital; it may be acquired. Sauerbruch thinks it is most often congenital and symptomless until some accidental infection brings it to the patient's notice.

He and Lotzin, working in his clinic, have evolved an ingenious theory of its cause, which they seek in an interference with the development of the lower main bronchus, usually the left one (fig. 1). The bronchus rides on Cuvier's duct, the duct connecting the primitive peripheral veins with the venous heart sinuses, and a persistent or unusually high duct is thought to be responsible for the interference. Some bronchiectases are certainly congenital, viz., the very largest ones, in which a whole lobe or even a whole lung may be converted into an enormous mono- or polycystic sac (fig. 2).

What proportion of bronchiectasis is congenital and what acquired I should not dare to judge. Many dilatations are likely to be acquired, for the frequency with which they are accompanied by sinusitis, nasal polyps and other forms of upper respiratory infection is striking, and certainly these infections have much to do, if not with causation of bronchial dilatation, then at least with maintenance of its symptoms.

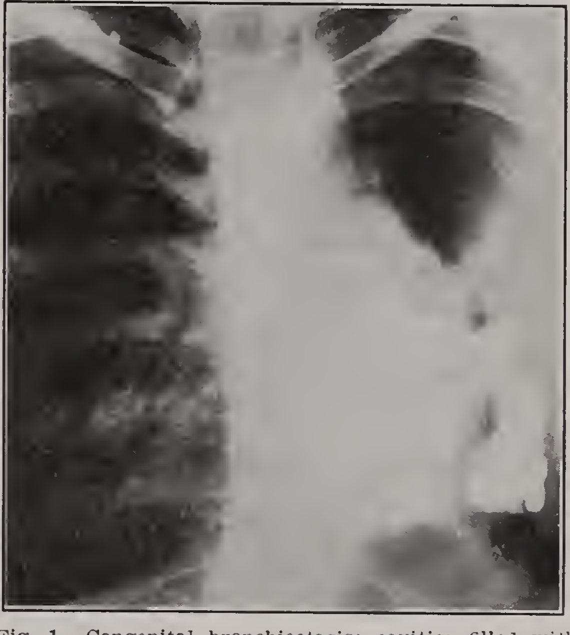
Fig. 1. Congenital bronchiectasis; cavities filled with lipiodal.

Another factor which has interested me particularly is to be sought in a constriction of the bronchial lumen. This may lie high up near the trachea, or lower down in the main bronchi and their branches. It may be caused from pressure from without, from enlarged hilus glands, for instance, or by an obstruction from within, a foreign body, a tumor or an inflammatory swelling of the bronchial mucosa. A partial stenosis will permit air to enter more freely on inspiration than it will allow

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* Read before the Seventh Annual Meeting of Pacific Northwest Medical Association, Tacoma, Wash., July 5-7, 1928.

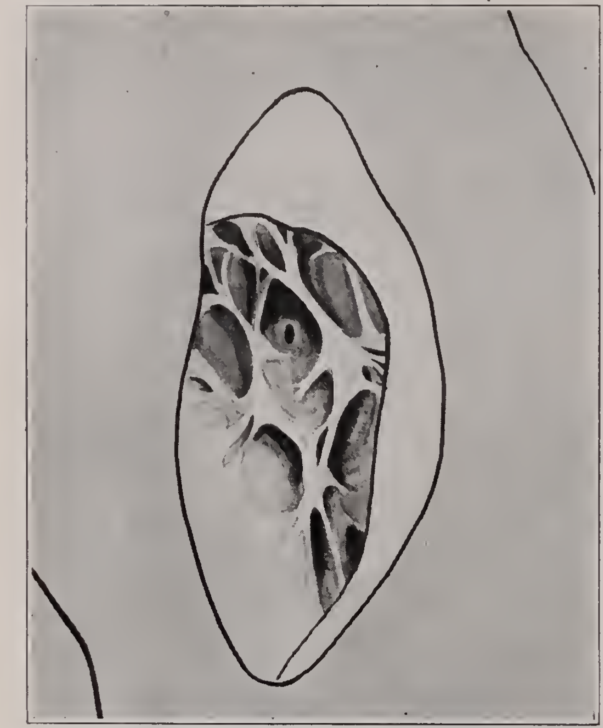


Fig. 2. Congenital bronchiectasis; cavities of lower lobe opened. (Drawn from a photograph.)

it to escape on expiration. It is reasonable to suppose that this increase in back pressure may cause a gradual dilatation of the bronchi, as spasm of the bronchioli causes a dilatation of the alveoli, emphysema, in asthma. Or as partial block of any other hollow viscus causes a dilatation; that of a ureter, a hydronephrosis, of a common duct, a gallbladder dilatation. This theory seems to me so simple that I wonder at its not having been dwelt on before (fig. 3).

Whether congenital or acquired, bronchial dilatation is in itself harmless. It is only when the sacs are or become infected that they cause symptoms. So that I suspect this disease or malformation to be more frequent than we imagine, it being only the infected bronchiectases that come to our notice.

The dilatation may be spindle-shaped or tubular and scarcely noticeable; the bronchial endings may be clubbed or bottle-shaped; or the bronchi may end in a multitude of larger or smaller cavities having, when filled with an opaque substance, the appearance of a bunch of currants or of grapes, or reaching the size even of a large egg.

Clinically and for purposes of treatment bronchiectases may be divided into two classes, the simple and the complicated. Among them, again, are to be distinguished the infected and the uninfected. Complicated dilatations are always infected and the complications are due to infection. These distinctions are of the greatest importance, for by them the future course of the disease and its treatment are determined.

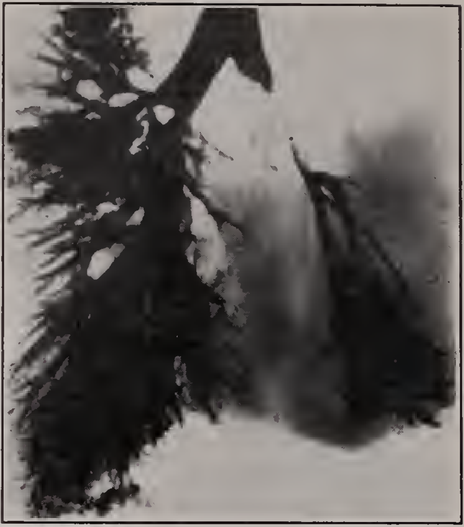


Fig. 3. Radiogram of autopsy specimen, showing bronchial stenosis and peripheral dilatation.

Uninfected simple cases are clinically silent. They are potential sources of trouble; treatment should confine itself to eradicating foci which might serve to infect them.

Infection may remain long confined to the bronchi themselves, and take the form of a purulent bronchitis, a bronchial blenorrhea; these are the infected simple cases. In complicated ones the infection spreads, causing ulceration of the bronchial walls and true abscesses. The acute exacerbations seen clinically may be due to extension of the infectious process beyond the bronchial mucosa, to ulceration or to an extension into the mediastinal lymph nodes. They may be due to pneumonia, pleurisy or empyema, results of infection of parts of the lung not necessarily bronchiectatic, but infected secondarily by extension or by foul sputum sprayed into them during fits of coughing.

We need not dwell upon points of diagnosis. The disease is not hard to recognize if one thinks of it. The predilection for lower parts of the lung, the very protracted course, the short duration of the febrile attacks, the enormous quantity of foul sputum in which repeated search fails to reveal tubercle bacilli are characteristic.

A radiogram clinches the diagnosis. A plain stereoscopic view may show increased peribronchial markings (markings evident through the heart shadow are always suspicious), or a basal greyness due to pleurisy, rarely cavitation. Filling the bronchi with iodized oil gives not only positive but definite negative evidence; both the normal and the dilated tree are perfectly characteristic. The injection is simple.

The patient holds his tongue out with a handkerchief; the base of the tongue and the tonsillar pillars are swabbed with a 5-10 per cent solution of cocain, or with a few grains of powdered cocain moistened with a little epinephrin solution. The patient keeps his head back and his tongue out for a few minutes so that the solution may run down into the pyriform fossae and into the larynx. Then, with the patient tilted toward the affected side, 10 to 15 c.c. of warm iodized oil (lipiodol) are dropped slowly onto the back of the tongue with a syringe, the patient holding his tongue out the while, and being told to breathe through his mouth, not to swallow and not to cough. Neither intratracheal injection, special canulae or other apparatus are necessary. An ordinary 10 c.c. Luer syringe fitted to a long thick needle works perfectly. The injection should be made before the screen, so that the oil can be watched as it flows down. After the desired area is filled films are taken. Ten or fifteen c.c. of oil are enough; often less is sufficient. Larger amounts are unnecessary and tend to obscure the film.

Lipiodol injection has been recommended therapeutically. I have rarely seen a therapeutic effect, although I have never seen harm from it, barring an iodine rash after it had been swallowed into the stomach. It must be remembered that the oil contains 40 per cent of iodine and, although this is absorbed from it very slowly, it is best not to use it in processes likely to be activated by it. It should, therefore, not be used in tuberculosis, as Archibald, Brown and Ballon have pointed out.

Plain x-ray films without lipiodol injection offer the readiest means of distinguishing simple from complicated dilatations. Films of the uncomplicated ones either show nothing abnormal or perhaps some increase in the peribronchial markings. It was said that films, in which peribronchial markings at the left base are heavy enough to be visible through the heart shadow, are always suspicious. The medial posterior part of the left lower lobe is a favorite site for dilatations and the heart shadow often obscures left lower lobe cavities in the radiogram.

Films of complicated bronchiectases may occasionally show the cavities themselves, if they are very large and the septa small, as in congenital dilatations. More ordinarily they show the products of inflammatory processes, basal greyness, a high or an obscure diaphragm or retraction of the chest due to pleurisy, chronic pneumonia or both.

Treatment of bronchiectasis must vary with the symptoms. The dilatation in itself is harmless and its carriers are unaware of its existence. The difference in various degrees of the disease was brought home to me three years ago, when a man of 45 was sent to me by Dr. Philip King Brown. In him I recognized a companion of the New Year before. On that day I had climbed Mt. Shasta, some 14,000 feet, together with three others, a long climb through ice and snow. The patient was one of the three others. He had a cough and some sputum most of the time, a little fever occasionally. This man certainly was not enough inconvenienced by his disease to justify operation.

Others are so unbearably distressed by their constant cough, inexpressably foul sputum, often repeated attacks of pneumonia and pleurisy, chronic toxemia, dyspnea and cyanosis that they are ready and eager to take any risk that offers prospect of relief. Truly they should be given a chance, if they have one, of being rid of a pestilence that makes them loathed by themselves and everyone around them.

Most important and essential, whatever be the future course of treatment, is attention to infections of the upper respiratory tract. All bronchiectatics should be sent to a competent rhinologist, who should be advised of the patient's diagnosis and his difficulties. Radiograms should be taken of the sinuses, and infections of the cavities and of the nose should be taken in hand. Treatment should be thorough, but extensive operation should be avoided, simpler ones being undertaken first. It is unfortunate for these patients to fall into the hands of an enthusiastic operator, who does radical sinus operations on patients quite unable to stand them. Instead of being helped they are so upset by the severity of such procedures that they never seem to regain their strength and respiratory equilibrium. Nasal polyps should be removed, infection of the antra treated by resection of the nasal wall and the other sinuses not neglected.

Occasionally clearing the nose and sinuses of infection is of such benefit that no further treatment is required; sometimes, especially in children, nasal treatment alone seems to cure the bronchiectasis. Most important is prophylactic clearing of the upper respiratory tract in uncomplicated bronchiectases of children. It may prevent years of hopeless and distressing invalidism.

Operation should not be undertaken on the lung until upper respiratory infection has been overcome. This takes time, but treatment of bronchiectasis is a wearisome task at best.

Treatment with medicines, rest, postural drainage and a dry, warm climate at low levels may help to keep the patients with complicated bronchiectasis fairly comfortable, but it cannot rid them of their invalidism. Creosote, guaiacol carbonate and similar drugs, taken regularly over long periods of time, are of some use in reducing the foulness of the sputum. Physical exertion is to be avoided; indeed, severe sufferers are incapable of it. Many of them learn to lean over the edge of the bed in the morning and empty their pouches of great mouthfuls of fetid sputum that has accumulated overnight, thus keeping themselves fairly free of cough and expectoration during the day. They do best in a low, warm, dry climate; inland towns of Southern California, Redlands and Riverside, the country around San Diego, the Imperial Valley, the upper Mexican West Coast, Egypt. Windy and dusty places they cannot stand, nor high altitudes which increase their dyspnea.

Codeine, morphine and similar sedatives are extremely dangerous to cyanotic and dyspneic patients who have little sound lung left to breathe with. They must cough out the great quantities of secretion that fill their lungs; they will drown in them if they are allowed to accumulate. I have seen two patients with bilateral bronchiectasis die overnight after they had been given not large doses of codeine by mouth to stop their cough and to let them sleep. They went to sleep, but they never awakened.

The earlier infected simple bronchiectases are treated the better. Their outlook, so far as I can discover, is utterly dismal. They begin with a cough and foul sputum. As time goes on they fall prey to the results of progression of infection beyond the limits of their cavities, to ulceration, to hemorrhage often very considerable in amount, to septic pneumonia, to pleurisy and to empyema.

In simple infected cases, it is said, the radiogram gives no evidence of progress of infection beyond the bronchi themselves, no pneumonic infiltrate, no pleurisy. These Rist and other Continental writers have advised treating with artificial pneumothorax. The method is applicable only to simple dilatations without adhesive pleurisy. A priori it would seem not very hopeful; it seems not likely that the pouches will collapse and shrivel as normal lung does, when relieved from the influence of negative pressure. Even though the lobe collapses, the pouches probably remain and will dilate again as soon as the lung is allowed to expand (figs. 4 and 5).

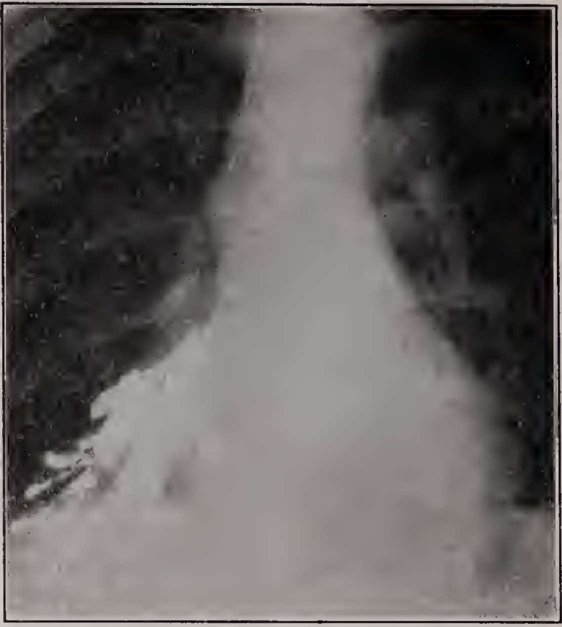


Fig. 4. Lipiodal injection of bronchiectatic lung.

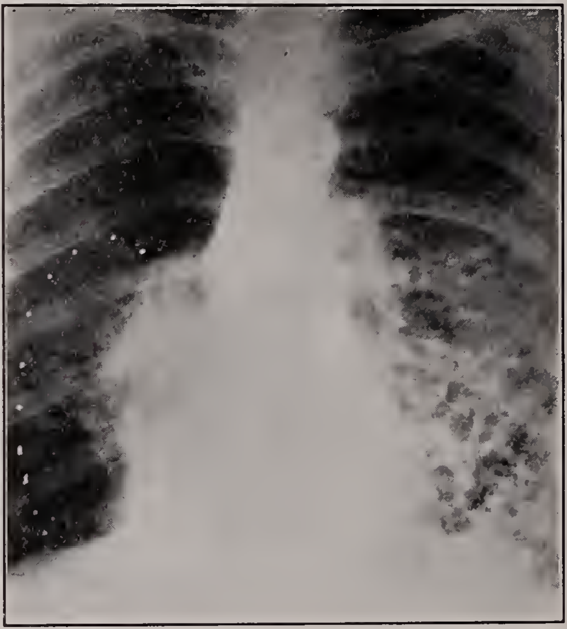


Fig. 5. Same after induction of artificial pneumothorax.

How long, then, shall we keep up pneumothorax? Forever? Perhaps. It may be worth a trial. Of all methods of surgical treatment this puncture of the chest with a needle is the least dangerous, if, indeed, it can be called surgery. Evarts Graham recently stated that he had tried pneumothorax and attributed its success to a lifting of the lower lobe, so that the bronchial pouches, in which the secretions remained stagnant by force of gravity, were turned bottom side up and could drain.

If the lung is tied down by adhesive pleurisy, especially by a diaphragmatic pleurisy which fastens the lower surface of the lower lobe to the diaphragm, a form that often accompanies bronchiectasis, then the lower lobe will not rise. If the pleurisy is more extensive, pneumothorax is impossible; no air will enter.

However, if Graham's idea is correct that the essential factor of pneumothorax treatment is a lifting of the bronchi and drainage of their contents, then lifting the diaphragm by causing a paralysis of the phrenic nerve, doing a phrenic avulsion, would lead to a similar result. This operation has also been tried and recommended. It has, like pneumothorax, the advantage of being harmless.

I cannot tell you much about the merits of these two methods. One girl under treatment had basal adhesions. An unsuccessful pneumothorax was followed by successful two-stage lobectomy. In another the pneumothorax was maintained but a short time as a preliminary to a certain method of lobectomy.

Another method of collapsing the ectatic lobe in simple infected bronchiectasis must be mentioned, viz., thoracoplasty, warmly advocated by Hedblom of Chicago. He insists on limiting it strictly to dilatations uncomplicated by chronic pneumonia and abscess formation; in other words, those in which x-ray films show a clear lung field. He insists that unless the lung is clear the operation is likely to kink, distort and clog the bronchi, bottling up the pus in them. He has had unfortunate experiences with these complications.

I mention the method because Hedblom's authority and experience are not to be disregarded. But simple ectases, the ones he chooses, can be treated more simply and less dangerously by pneumothorax, supplemented, if necessary, by avulsion of the phrenic nerve. The effect is identical; perhaps, if Graham's theory is correct, even a little better. Furthermore, should the collapsed lobe show a tendency to clog with stagnant secretion, pneumothorax is not irreparable; the insufflated air can be let out.

The results of thoracoplasty in my hands have been disappointing. Expectoration diminished at first, but was far from quite ceasing; after a time it increased to its original amount. That expectoration entirely vanish may be too much to ask, but I confess to a want of enthusiasm about methods that fall short of a practical cure.

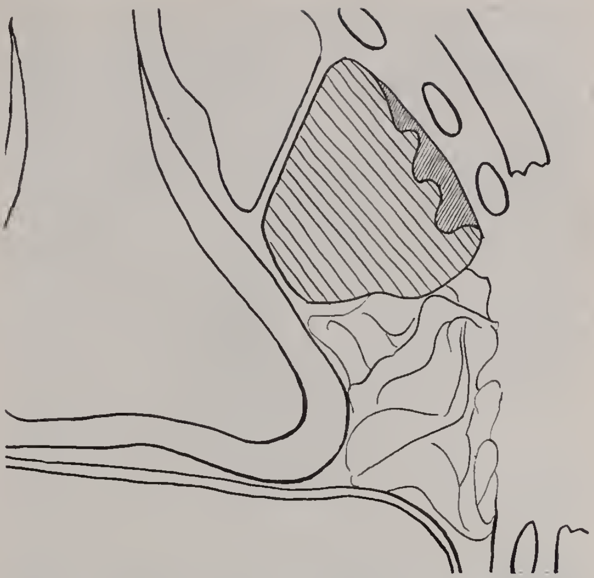


Fig. 6. Method of Garre for pulmonary compression. A large gauze pack has been introduced through a thoracotomy opening in the left chest. It lies between the diaphragm and the left lower lobe, pushing the lobe upwards.

With enumeration of these three methods, artificial pneumothorax, phrenic avulsion and thoracoplasty, ends the list of indirect attacks upon bronchiectasis. A disheartening list. A disheartening confession of our technical limitations. For the reasonable thing to do, what we do in other nonvital organs that are infected and suppurating, is to drain the pus or remove the offending organ or both. That should be the reasonable thing to do with a suppurating lobe of the lung.

Let us discuss intrapleural, more direct methods of treatment. An attack, not exactly direct nor yet quite indirect, is the compression method of Garré and Quincke, brought out in their book on lung surgery in 1913. The method in its original form has been forsaken, but its elements underlie several other procedures to be discussed later. The offending lobe is exposed through a long intercostal incision, allowed to collapse if not adherent, or dissected free from its attachments if it is, and pushed upwards by a large gauze pack inserted between it and the diaphragm (fig. 6).

The disadvantages of the operation are apparent. It is effective at first, but its efficiency is impossible to maintain. Unless supplemented by extensive rib resection, phrenicotomy or both, the collapsed lung rapidly reexpands, the cavity in the chest becomes increasingly shallow and impossible to pack and soon the chest is in statu quo ante. Its advantages are also apparent. It lifts the lobe and provides a downhill drainage of the bronchi in Graham's sense; it makes a firm barrier around the lobe and

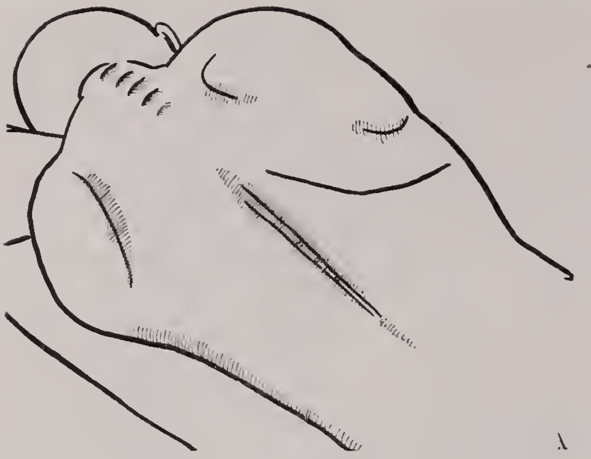
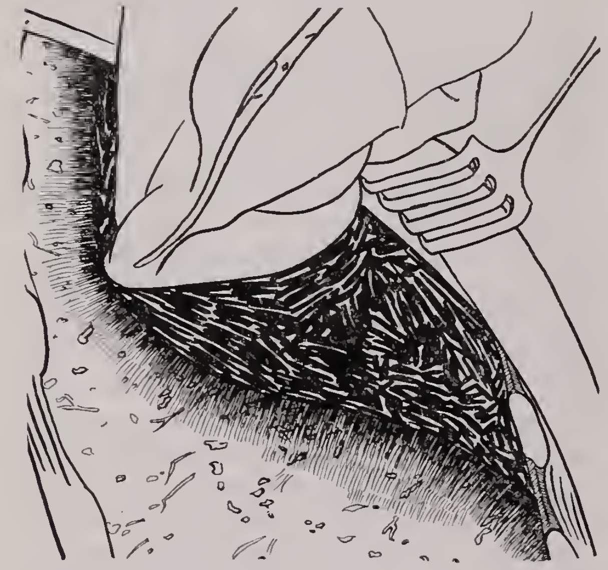


Fig. 7. Position of patient and incision for lower lobe abscess.



Figfl 8. The ribs have been resected. The lung shows through the thin pleura which has been pushed away from the ribs. The resulting space is being packed with gauze.

fixes it in a position, where it may be attacked more directly later.

Direct methods are of two kinds. They intend either drainage of the pus sacs or their removal, which amounts to removal of the whole lobe. Drainage methods are of necessity extensive. I need mention smaller and apparently simpler operations, resection of one or two ribs and insertion of drainage tubes into the lung, only to warn most stringently against them. They invariably lead to trouble.

Drainage operations are extensive, but not so dangerous as lobectomy. They are the only procedures to be considered in bilateral bronchiectases. Although they start as drainage operations, they often end as lobectomies. The lung must be attached to the chest wall before it can be drained.

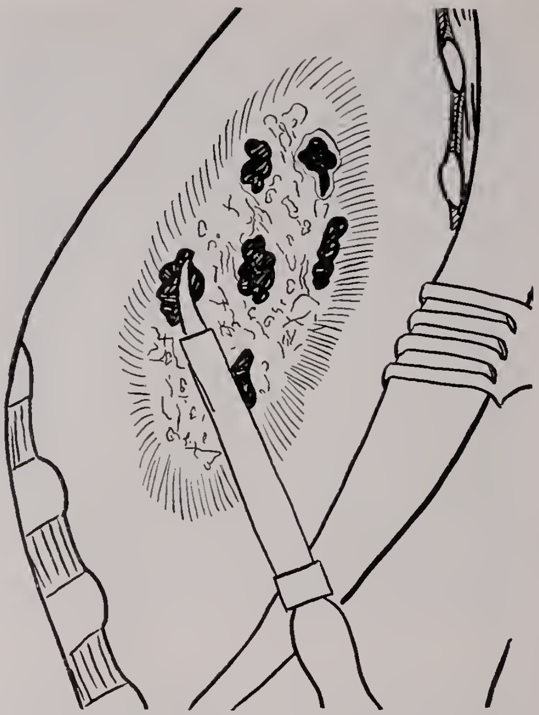


Fig. 9. A wide, shallow area has been cauterized with a Percy cautery and a number of pouches have been opened.

It may already be attached by an adhesive pleurisy; if not, we must make one.

Incision for drainage of the lower lobe begins at the angle of the sixth rib, runs downward parallel to the spine and curves forward along the eighth rib or the eighth intercostal space. The sixth to the eighth ribs are resected and the pleura exposed, carefully at first. If the pleura is adherent, the pouches may be opened immediately; if not, it is carefully pushed away from the ribs at the edges of the thoracotomy and compressed with a large gauze pack. Sauerbruch uses a large tampon of soft paraffine. It is immaterial what is used, so long as the tampon makes efficient compression. The wound is closed over the tampon (figs. 7 and 8).

A fortnight later it is reopened and the tampon removed. The pleura is now adherent and may be entered. A wide shallow area of lung and pleura is charred with a massive Percy cautery or a large soldering iron, so that as many pouches as possible are opened at once (fig. 9). Cauterization need not be deep, but it should cover a wide area. It is clear that the wider, but not the deeper, the area covered, the greater will be the number of pouches exposed. It is impossible to open all pouches at one sitting, neither is it necessary; as soon as one is open the way to the rest is clear.

After cauterization the pouches are rapidly but thoroughly packed with gauze and the wound left

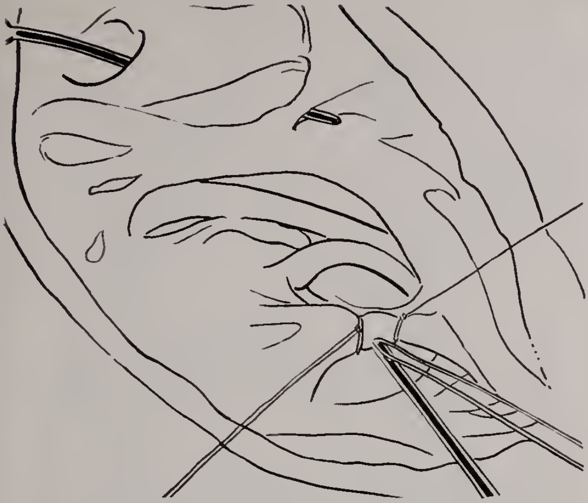


Fig. 10. Secondary operation. In the upper part of the illustration a grooved director passes under a partition separating one pouch from another. In the lower part the director passes under a strand wihch is being severed between ligatures with a galvanocautery. The Percy cautery is better for this purpose than the small one shown here.

wide open. There is considerable reaction after this first stage, usually three or four days of temperature to 101°-102°. After a week or ten days the raw surfaces begin to granulate and the cavities to retract characteristically, assuming the appearance termed by Sauerbruch, "gridiron lung." Large cup-shaped or bottle-shaped depressions appear, lined with velvety bronchial mucosa and secreting viscid mucus; thick strands stretch between them and across their walls and to the edges of the wound. These strands contain the pulmonary vessels and larger bronchi. One bronchial pouch leads to the rest. A probe passed into the bronchial opening of each pouch leads more or less deviously to the trachea. With a grooved director as a guide, passed now forwards toward the trachea, now backwards, as smaller bronchi of the second or third order, each with a pouch at its end, debouch into the larger bronchi, all of the pouches may be entere dand opened in succession (fig. 10). Large strands that are to be traversed with the cautery should be clamped, tied and burnt across between the liagtures (fig. 11). Not only do they bleed, but their larger vessels invite air-embolism, if they are not tied before they are opened.

It is usually necessary to wait from one to two weeks after the lung is first entered before proceeding to further cauterization. Subsequent cauterizations, however, are simple and upset the patient not at all. It is of advantage to let them follow rapidly one upon the other before the wound edges retract. No anesthetic is necessary; the operation takes but a few minutes.

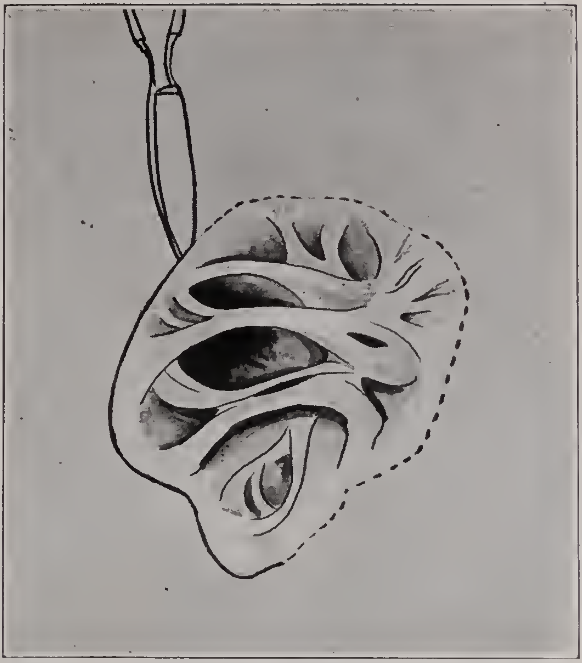


Fig. 11. Closure of "gridiron lung after Lebsche. Fistula circumscribed.

If cauterization is really carried to an end so that all the pouches are open, we have the whole periphery of the lobe slit open and unfolded. The lobe stills remains attached by adhesions to its pleural surfaces and by a thick central stalk containing the larger vessels, the main bronchus and perhaps a few larger bronchi of the second order.

Graham, by whom this operation has been popularized in this country, states that it is not necessary to carry cauterization this far; that after the bottom has been burnt out of a few pouches the rest drain sufficiently and cough and expectoration cease. I have not been so fortunate. My patients have not stopped coughing or spitting so long as their lobes contained unopened pus-sacs, debouching into bronchi central to those that had been cauterized. The operations have been safe and their mortality comparatively small, but they have been interminable, trying not only the patient's patience but the surgeon's.

No attempt should be made to close the bronchial fistulae remaining after cauterization, until cough and expectoration have quite ceased and the patient has gained fair weight and strength. Treatment then is a matter of many months, often, or a year or more.

Certainly the fistula with a daily dressing is annoying, but of the two evils, the other being the constant cough and foul sputum, it is certainly the lesser. Patients prefer it; their surroundings do immeasurably. But they tire of their fistulas, too, and beg to have them closed.

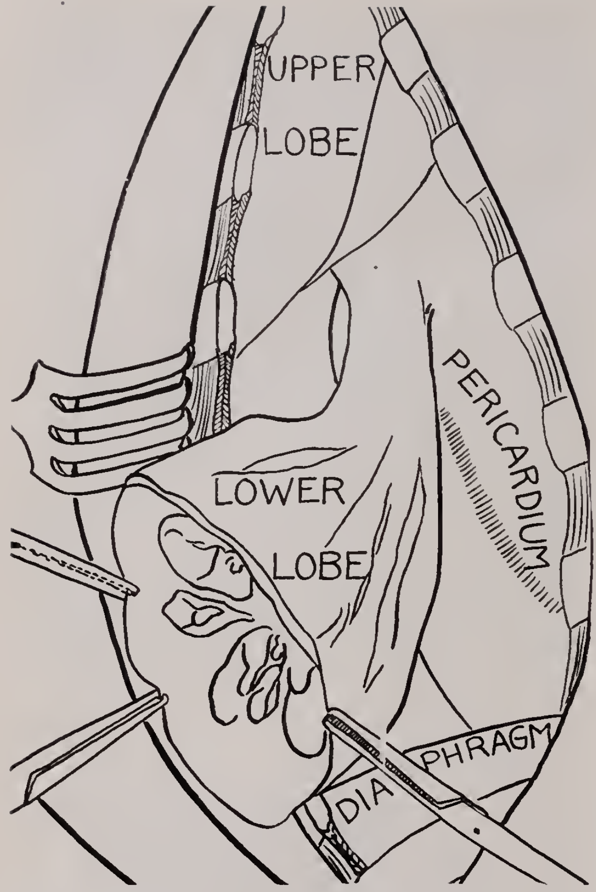


Fig. 12. Closure of bronchial fistula. Lower lobe dissected free.

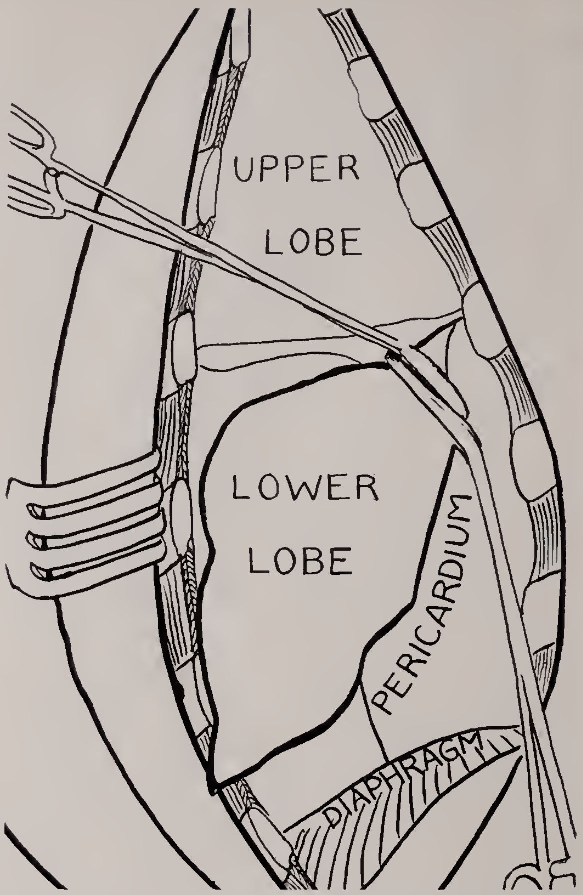


Fig. 13. Closure of bronchial fistula. Lobe freed, pedicle clamped.

Closure amounts to lobectomy. The edges of the opening are circumscribed and the lobe freed of its adhesions. Adhesions to the diaphragm are firm and need be separated with great care not to perforate it, keeping a constant watch for the brown muscle fibres by which it may be recognized. Those to the chest wall are of no importance and may be separated fearlessly. Those to the adjacent lobe and to the pericardium (on the left side) are less firm and cleave before the knife or cautery. When the lobe is freed so that its pedicle is clear, it is clamped with two large, well-closing, curved clamps and cut away, leaving enough lung to allow of covering the bronchial stump. If the patient's condition permits, the vessels are secured and tied separately with fine silk and the bronchus closed with fine interrupted black silk sutures. Both are buried under the stump of the lobe, which is folded over them with catgut. The remaining cavity is lightly packed with gauze and left open.

If dissection of the lobe was difficult and bloody, as it often is, the pedicle may be secured with clamps which are left in place; the lobe may be cut away immediately or left to slough above the clamp. The clamps are removed in five or six days (figs. 12, 13, 14, 15, 16). If a sloughing lobe is left, it is removed with a cautery before the clamps are loosened. There is some danger of hemorrhage from the pulmonary vessels, but not so much as when clamps are left on those of the greater circulation, which carry a pressure six times as great as those of the lesser. Healing of these large cavities is surprisingly rapid and satisfactory. The bronchial stump retracts towards the mediastinum, the cavity rapidly granulates, becomes shallower and closes. Sometimes a small bronchial fistula appears as the silk gives way and is discharged; usually it heals spontaneously.

This is a secondary lobectomy. Other surgeons have arrived at the same result by different methods. Whittemore draws the lobe to the surface, herniates the lung, applies sutures to the pedicle and lets the lobe slough off. His statistics are good. Sauerbruch, Zaaijer of Leyden and others produce an adhesive pleurisy in various ways before doing lobectomy, either in one stage or by ligating the hilum and allowing the lobe to slough.

I have tried separating the chest into two com-

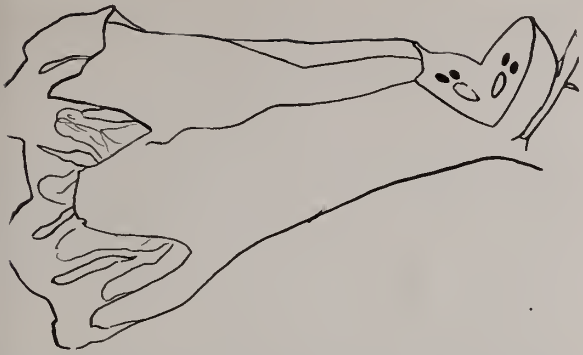


Fig. 14. Closure of bronchial fistula. Pedicle clamped. Bronchus and great vessels ready for suture and ligation.

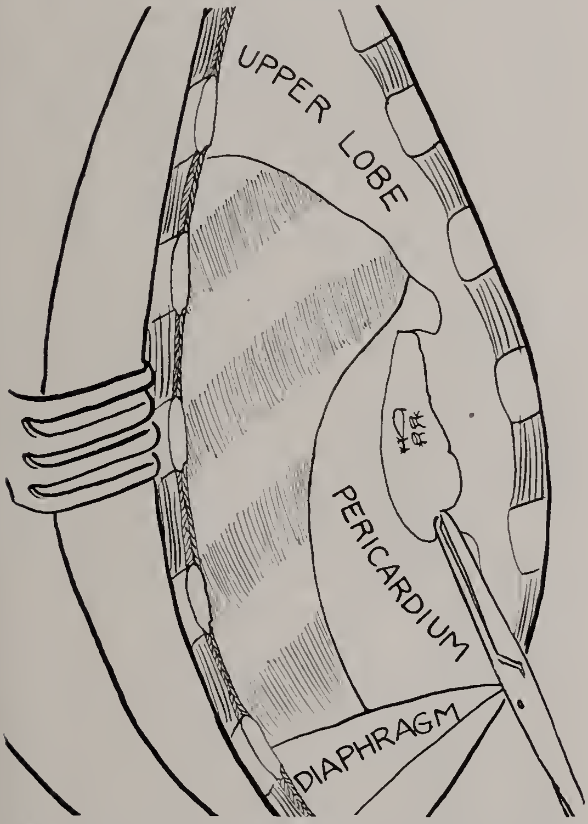


Fig. 15. Closure of bronchial fistula. Vessels ligated. Two stitches have been placed in the bronchial stump.

partments by bringing a skin flap down between the upper and lower lobes, placing packing about the lower lobe and allowing the skin flap to adhere, something after the manner of Garre. This gives good access and seems to work well. The lobe is removed later with a cautery.

Are not these methods all make-shifts? Why not remove the lobe at once, tie off the stump and close the chest? This is the ideal, but as yet I know of no one who has consistently attained it, except Brunn of San Francisco, who has succeeded in doing a number of one-stage lobectomies with closure of the chest. Others have forsaken the method on account of its danger. The difficulty lies in suture of the bronchial stump. If the bronchial sutures give (and they often do when working in a field so badly infected), the patient coughs the contents of his air passages into a chest in no way prepared to receive them. The result is overwhelming infection of a previously sterile pleura. Draining the chest prophylactically is even more dangerous; the resulting pneumothorax is sure to become infected.

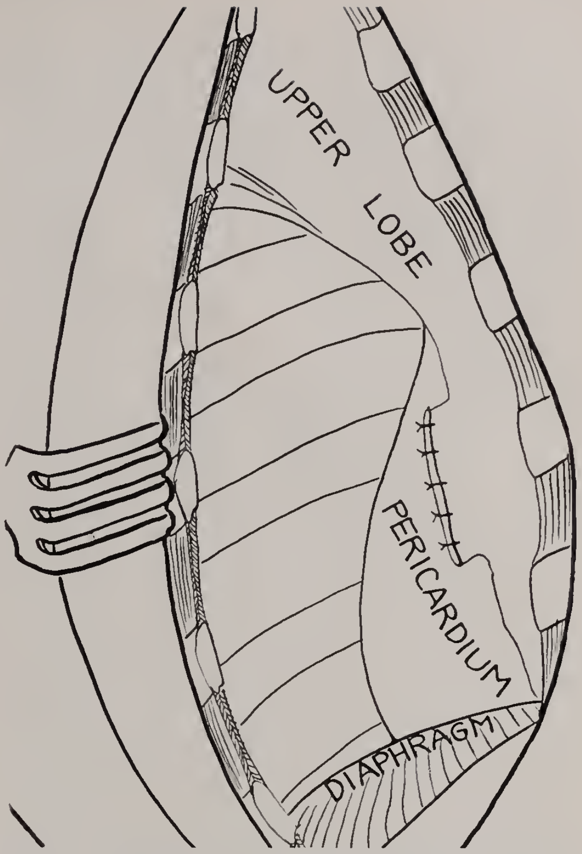


Fig. 16. Closure of bronchial fistula. The stump of the lobe is sutured over the closed bronchial stump and the ligated great vessels.

One-stage lobectomy is an ideal not yet attained. We have made enough sacrifices to this will-o'-wisp; we shall probably reach it, but not yet.

Operations for bronchiectasis, with the exception perhaps of pneumothorax and phrenectomy, make considerable demands on the heart and lungs. Any interference that makes coughing painful or difficut, even a simple rib resection or thoracoplasty, is likely to be followed by more or less pneumonic consolidation. Patients, therefore, who are running on narrow margins, had better not be operated upon. Those with much reduced vital capacity and dyspnea are unlikely to withstand further reduction of their breathing space. Cyanotic patients, especially, are bad risks; they succumb to impairment of the right heart. Toxic patients, those with elevation of temperature to over 100°, should have operation deferred until fever and toxicity abate, being treated meanwhile with rest, climate and creosote. Thin and anemic patients should be prepared by a course of heliotherapy or artificial light. Older patients, those of forty or forty-five years and over, those whose hearts, blood vessels and kidneys are worn out by prolonged bouts of sepsis should be excluded.

The risk of operation is much increased when both lungs are affected, yet bilateral affection does not absolutely contraindicate operation, if the patient is young and otherwise robust. The greatest risk lies in postoperative increase in the infection of the unoperated lung. Occasionally, however, if the major side is done first the other improves.

The least dangerous of all procedures on the chest is the one-stage cautery operation. This is less dangerous even than a simple extrapleural rib resection, for it immediately provides a vent for the secretions which tend to accumulate in closed operations on the chest wall. It is applicable even to older patients and those with reduced vital capacity, in whom extrapleural packing, the first stage of a two-stage operation, would be dangerous. Only in patients with definite pleural thickening can one be sure that a one-stage operation is possible. Patients without retraction of the chest and without radiographically demonstrable thickening should not be operated upon unless a two-stage operation seems practicable.

To summarize this compressed narrative of what has been done and what may be done:

1. Treatment of bronchiectasis should begin with clearing of the nose and sinuses of infection.
2. Simple uninfected bronchiectases should have the upper respiratory tract cleared; otherwise they should be let alone. They are symptomless.
3. Simple infected bronchiectases may be given a trial with pneumothorax, combined if necessary with phrenic avulsion.
4. Complicated bronchiectases, in patients unable to withstand severer procedures, may be opened with the cautery.
5. Complicated unilateral bronchiectases in fairly robust patients may be treated by lobectomy done in two or more stages, the chest being left open and the hilus fixed with clamps, sutures or packing.
6. Toxicity, sepsis, cyanosis and marked dyspnea contraindicate operation on the chest wall; they may allow of pneumothorax or avulsion of the phrenic nerve.

DIFFERENTIAL DIAGNOSIS OF JAUNDICE

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A case of jaundice is particularly interesting because it opens up a vista of diagnostic possibilities and whets one's appetite for solving the puzzle in hand. For it has been sagely said of medicine that "the most important thing is diagnosis; the next most important thing is diagnosis; and the third most important thing is diagnosis."

Jaundice or bilirubinemia is the retention of bile pigment or bilirubin in the blood. Bile is composed of bile pigment and bile salts. Bile pigment is not chiefly made in the Kupffer cells of the liver, as hitherto thought and taught, but is formed from the blood pigment or hemoglobin of broken down or hemolyzed red blood cells, mainly in the reticulo-endothelial cells of the bone marrow, less so in the spleen, and least in the liver, according to Mann and his coworkers.

These investigators have shown conclusively that a dog with his liver removed will become jaundiced, that the rate of bilirubin formation in the blood is not altered by extirpation of the liver, that removal of all the abdominal organs does not interfere with the rate at which bilirubin is added to the blood, and, finally, that the liver itself is only a minor source of bilirubin. This alters our preconceived idea that jaundice is always a liver disease. We may, indeed, have jaundice in which the liver is not primarily in any way at fault, as in the hemolytic variety.

Bile salts are secreted by the liver, while bile pigment is chiefly excreted by the liver. In jaundice we do not always find the same relative proportion of bile pigment and bile salts as exist in bile. In what is called dissociated jaundice, the proportion of bile pigment to bile salts, normally present in bile, is disturbed. But bile pigment is never found in the blood plasma in jaundice without bile salts, except in hemolytic jaundice and in some cases of obstructive jaundice, where there is renal dissociation.

Renal dissociation occurs when either bile salts or bilirubin pass through the kidneys. Thus, in typhoid fever jaundice, bilirubin may pass off wholly through the kidneys and only white bile be found in the gallbladder. Again, in cirrhosis of the liver with jaundice, only bile salts may pass into the urine. In hemolytic jaundice an excess of bile salts would not be expected in the blood because they are formed in the liver and this is not primarily at fault in this disease. Mental depression, slow pulse and pruritus in jaundice are attributed chiefly to retention of bile salts in the blood. But we are mainly concerned with bile pigment retention in jaundice, the matter of bile salts being of secondary account in the present state of our knowledge.

Three forms of jaundice are commonly recognized:

1. Obstructive, due to blocking of the outflow of bile from the larger ducts, as by stone, worms or tumor in the common duct, or stricture of the duct. Extrinsic new growths, abscess, adhesions, movable organs and enlarged glands may compress the larger ducts from without. Stone and tumor of the head of the pancreas are the more common causes of obstructive jaundice. Damming back of bile causes the finer biliary ducts to rupture into the lymph spaces of the liver, whence the bile passes into the blood through the thoracic duct.

2. Hepatic, toxic or infectious jaundice. Two and often three causes are involved in hepatic jaundice. (a) Inability of the normally formed bilirubin in the blood to enter or pass through the damaged polygonal cells lining the bile capillaries, in other words, interference with excretion. (b) Mechanical obstruction of the finer bile ducts from inflammatory exudate and from inspissated bile resulting from cholangitis and hepatitis, as in catarrhal or infectious jaundice. (c) The toxin responsible for hepatic jaundice, bacterial or chemical, may induce hemolysis, so that the hemolytic factor also enters into the etiology of hepatic jaundice. Hepatic jaundice is produced by various infectious diseases, as pneumonia, typhus, typhoid, scarlet and yellow fever, malaria, septicemia, syphilis, acute yellow atrophy of the liver, infectious or catarrhal jaundice, icterus, neonatorum and toxemia of pregnancy.

Chloroform, arsphenamine, phosphorous and other poisons will cause toxic hepatic jaundice. This type of jaundice sometimes occurs in exophthalmic goiter and in passive congestion of the liver from heart failure. The hepatic or toxic infectious form of jaundice is seen most frequently in this region as catarrhal jaundice and in pneumonia.

3. Hemolytic icterus. In this, hemolysis sets free too much bilirubin to pass through normal liver cells and retention in the blood or jaundice results. This is seen more commonly in pernicious anemia, in familial and sporadic hemolytic icterus, and in worm anemias.

Our general knowledge of jaundice has been recently greatly extended through the work of Mann in the physiology of the liver, and by that of Hijmans van den Bergh and Rosenthal in the use of functional liver tests, to which their names have been given. We noted above the results of Mann and his coworkers in discovering the origin of bilirubin. This remarkable contribution to physiology was made possible because Mann was the first who was able to keep dogs alive for long periods after extirpation of the liver by means of intravenous injections of glucose.

Tests of liver function are necessarily disappointing for two reasons: The first is that there are really at least six liver functions and to test them all is impractiable. The second cause of failure applies equally to the kidneys, the enormous reserve function. At least half the kidney tissue may be removed with no interference of function whatever, as is seen after excision of one kidney, and we have known of an instance in which blood chemistry, many 'phthalein tests and urinary examinations were wholly normal in the presence of the small red contracted kidneys at autopsy. It is said with one-fifth of normal liver tissue remaining, the function will be undisturbed.

The intravenous injection of dye (bromsulphalein) in Rosenthal's test of liver function shows no retention of dye in the blood after thirty minutes in the normal person. In jaundice there is a retention of dye fairly parallel to bilirubin retention in most instances. Where the jaundice clears up, there may still be retention of dye in the blood from damage to the liver.

But the dye test would be much more valuable, if it showed dye retention or disease of the liver when there is no jaundice present. The truth is that sometimes the test is positive and sometimes negative in grave liver pathology. We found dye retention varying from five to seventy per cent in thirty minutes in four cases of atrophic portal cirrhosis and no dye retention at all in two cases of atrophic portal cirrhosis, one with marked jaundice, only a short time before coming to autopsy (NORTHWEST MEDICINE, July, 1926). This test is of some value when positive but of no value when negative. That is, when there is dye retention there is probably some disease of the liver, and when there is no dye retention in thirty minutes, there may or may not be liver pathology.

Now, regarding the van den Bergh test in jaundice. In 1913 van den Bergh found, in experimenting with solutions of human bile and bilirubin, that the old Erlich's diazo reagents would give a reaction with solutions of human bile without alcohol.

This he called the direct reaction. To determine the presence of unaltered bilirubin in normal blood it was necessary to add alcohol to the diazo reagents and the coloration resulting he termed the indirect reaction.

He inferred that there are different kinds of bilirubin in the blood in jaundice, where the liver is involved, normal bilirubin that occurs in health and in hemolytic jaundice, and a bilirubin that has become changed by either passing through the liver as bile and reabsorbed, as in true obstructive jaundice, or that which has become altered in diseased parenchymal liver cells in hepatic jaundice and is also resorbed into the blood. The direct reaction is used, therefore, to determine the kind of jaundice, whether obstructive, hepatic or hemolytic; the indirect reaction to ascertain the precise amount of bilirubin in the blood in any kind of jaundice and so to discover latent or hidden jaundice, and, when the direct reaction is negative, to demonstrate hemolytic jaundice.

The direct reaction is performed by adding Erlich's diazo reagents to human serum in jaundice. There are three distinct forms of the direct reaction. (1) The immediate direct reaction, when a violet coloration appears within thirty seconds and reaches the maximum in two or three minutes. (2) The delayed reaction, when the coloration appears after thirty seconds and reaches the maximum in half an hour. The delayed reaction is found in nonobstructive jaundice, as hemolytic icterus, but may be negative in the latter when it is shown by the indirect reaction. (3) The biphasic reaction, when the coloration occurs within thirty seconds and reaches the maximum slowly within the hour. In other words, the biphasic reaction is a combination of the direct and delayed reactions and, therefore, signifies the presence of a jaundice due to a combination of an obstructive with a nonobstructive cause, as in infectious or catarrhal jaundice. But this interpretation must not be taken too literally nor too much reliance put upon it for differential diagnosis.

In obstructive jaundice the van den Bergh reaction is immediate direct. In fact the test is stated (Jump, *Med. Clinics of N. A.*, Jan., 1929) to differentiate obstructive from nonobstructive jaundice. But this is not the case, if we consider gross obstructive jaundice, as in the classification above, which the writer referred to also employs. For instance, infectious or catarrhal jaundice is included among the hepatic types and in this the reaction may be biphasic or immediate direct which would indicate an obstructive icterus. So it will be seen that whether the van den Bergh test enables us to distinguish obstructive from nonobstructive jaundice is a matter of definition or classification. The test does not inform us how to differentiate hepatic (where the bile ducts are occluded by inflammatory products) from obstructive jaundice, nor does it aid us in separating the various causes of obstructive jaundice, as the presence of stone in the common duct from pancreatic tumor.

Clinical evidence must still be our chief reliance in differential diagnosis in jaundice, although the van den Bergh test may supply corroborative evidence. Thus, a biphasic reaction favors a diagnosis of catarrhal jaundice, and an immediate direct would uphold a diagnosis of obstructive jaundice from intrinsic or extrinsic causes. A delayed reaction confirms a diagnosis of hemolytic jaundice. There is, however, little difficulty in differentiating clinically an obstructive from a nonobstructive jaundice.

The indirect reaction for quantitatively estimating bilirubin in the serum of jaundice is of great value. In the normal individual there exists from 0.5 to 1.5 mgm. of bilirubin in 100 c.c. of serum. 0.5 mg. bilirubin in 100 c.c. of serum is sometimes used as the unit in the van den Bergh test. The icterus index test also indicates the degree of jaundice. The serum of the icteric paitent is matched in a colorimeter with a standard solution of potassium dichromate (1 to 10,000). The icterus index for normal serum is from 2 to 5; in latent jaundice, from 5 to 15; and when clinical jaundice is present, 15 and over.

Extrinsic Jaundice

Case 1. Man, 66. Has had sour stomach, belching of gas and abdominal distention after meals for periods of several months at a time since early manhood, and yet has been free from any indigestion at all for years at a time. Has not noticed that discomfort comes on at any particular time after eating or is relieved by any drug or by food.

About ten days ago had an attack of severe pain in the upper abdomen, requiring morphine subcutaneously. Came to office some five days later. Has been quite weak since and has eaten little and had much heartburn after meals. His sclera was noticeably icteric and he says he was quite jaundiced immediately after attack of severe pain. There was marked tenderness without muscular rigidity in region of gallbladder. Pulse and temperature and leucocyte count normal and no bile pigment in urine.

Operation advised for probable chronic cholecystitis and cholelithiasis. Dr. Gunby found the duodenum firmly adherent to the under surface of a normal gallbladder and he evacuated about an ounce of pus from an abscess in the region of the common duct, due to subacute perforating duodenal ulcer.

He closed the perforated ulcer with sutures and did a posterior gastrojejunostomy. The patient made a good recovery eventually.

Case 2. A very similar case occurred about the same time in a man of 48 who began to have stomach trouble five years before. At this time he was attacked suddenly by a violent pain in the pit of the stomach, radiating to the right shoulder and requiring morphine subcutaneously. After this he became jaundiced and the pain continued in lessening degree for a week.

He has just recovered from a similar but much less severe attack with much belching and heartburn since. There has been no relief of pain by eating and usually he can eat anything. There is marked tenderness over the gallbladder region but no upper rectus rigidity. He cannot take a deep breath on account of pain in region of gallbladder. The radiogram of gallbladder with dye is positive, that is, the gallbladder was not visualized. Diagnosis probable cholecystitis and cholelithiasis.

Operation by Dr. Gunby showed chronic perforating duodenal ulcer covered by adhesions to the gallbladder. The ulcer was excised and bowel sutured. Posterior gastrojejunostomy was done and recovery was uneventful.

Evidently the first attack five years before was due to acute perforation of the duodenal ulcer with pressure on the common duct and jaundice as in the first case. In the latter case there was the history of the acute pain radiating to right shoulder, followed by jaundice and recently the making of a positive cholecystogram. This finding is one of the weaknesses of cholecystography as it is not infrequent in duodenal ulcer.

Both of these cases illustrate the great similarity of perforating duodenal ulcer to acute cholecystitis with gallstones in the presence of jaundice, and also our diagnostic fallibility. The main thing to decide is whether operation is advisable and when.

Latent Jaundice

Case 3. Atrophic portal cirrhosis. Cancer. Man, 59. Moderate drinker ten to twenty years previously. Five weeks ago began to have abdominal distention and shortness of breath, swelling of the feet, diarrhea with passage of some blood, and nosebleed.

Physical examination. Patient looks fairly healthy with moderately good color and is well nourished. Head and neck negative except for enlarged venules on face. Pupils react normally to light and no palpable lymph nodes about neck. Dulness on percussion was found at bases of both lungs in the back, with diminution of breath sounds in the same region.

The heart was negative but upper border of liver dulness was raised about two inches. The abdomen was greatly distended, with marked dulness on percussion in the flanks, shifting on changing position of patient. No mass could be felt in the belly nor could the lower border of the liver be palpated after tapping. The legs were edematous below the knees.

The hemoglobin was found to be 70 per cent; the red cell count was 3,000,000, with 6,300 leucocytes. Proctoscopic examination was negative but piles were present. The urine was normal. The renal function phthalein test showed 68 per cent of dye return in two hours. The blood urea was 38.2, and the creatinine 2.2 mg. in 100 c.c. Wassermann reaction negative.

The patient was tapped and about one gallon of clear ascitic fluid with sp. gr. 1014 was removed. There was a delayed direct van den Bergh reaction which is found in hepatic nonobstructive and hemolytic jaundice. The indirect van den Bergh reaction gave 3.5 mg. in 100 c.c. This showed latent jaundice which is not perceptible by icteric color of the sclera or by the presence of bile pigment in the urine.

With ascites, dilated venules in the face, piles, diarrhea, history of alcoholism, nosebleed and latent jaundice, without enlargement of the liver, one cannot exclude atrophic portal cirrhosis. The man is of cancer age and, nothwithstanding the absence of emaciation, marked anemia, digestive disturbances, abdominal tumor, glandular metastases and primary tumor, it is always impossible to rule out cancer. Then, two days after tapping the patient began to have continuous bleeding (which caused his death) from his abdominal puncture. This bleeding was thought to be probably due to erosion of a blood vessel in the liver, resulting from malignant disease. Such was found to be the case at autopsy. Diagnosis prior to autopsy was portal cirrhosis or cancer of the liver. Autopsy showed carcinoma of the liver and atrophic portal cirrhosis with a shrunken liver.

The presence of latent jaundice, as shown by the indirect van den Bergh reaction, spoke for liver diseases rather than the other usual causes of ascites, namely, heart weakness, adherent pericardium, renal disease, neoplastic or tuberculous peritonitis.

Hepatic, Toxic or Infectious Jaundice

Case 4. Catarrhal jaundice. Male, 60. Has lost twenty pounds within a short period. One month ago began to suffer from loss of appetite and upper abdominal discomfort. Two weeks ago became suddenly jaundiced and passed clay-colored, putty-like stools.

He had no severe pain at any time or vomiting, and does not think he had fever. About one week ago he thought jaundice cleared up considerably for twenty-four hours. Patient is well developed and nourished and alert mentally, though slow in his movements.

Physical examination was generally negative except for deep jaundice. Neither liver nor gallbladder palpable. The upper abdomen was slightly rigid but no tenderness or masses discovered. Urine was stained dark with bile pigment. Feces light gray and loaded with neutral fat. The van den Bergh reaction was immediate direct. The indirect reaction gave 10.7 mg. in 100 c.c. of serum. Wassermann test negative. Red blood cells, 4,950,000; white blood cells 9,000; hemoglobin 108 per cent.

The duodenal contents contained both bile and pancreatic ferments, when withdrawn with Rehfuss tube. Gastric contents contained free HCl 40 and no blood. Chest showed wide aortic shadow in fluoroscope and a steer horn stomach, with slightly irregular cap, and duodenum forms a widening curving arch as though encircling an enlarged head of the pancreas. The outline of the greater curvature near the pylorus was somewhat irregular. Stomach emptied rapidly and wholly within five hours. Colon was negative by x-ray and proctoscopic examination negative. Jaundice wholly disappeared in six weeks.

Comments. The age, loss of weight and appearance of widely curving duodenum with a painless jaundice strongly suggested cancer of the head of the pancreas. But with no enlargement of the liver or gallbladder and normal hemoglobin without loss of strength the diagnosis was uncertain.

There is always great loss of weight in jaundice from anorexia and because fats are poorly digested, and also from loss of glycogen storing function probably. Laboratory tests are of little value, although the radiogram may show enlargement of the gallbladder. Time is the essential factor. The jaundice lasts sometimes for several weeks or even months in catarrhal icterus. If the patient is not growing worse after several weeks, expectant treatment may be followed but, with no changes or in deepening jaundice, exploration is advisable after six or eight weeks in doubtful cases. One cannot exclude stone in such a case even after apparent recovery.

Case 5. Acute yellow atrophy of the liver. Woman, 40. Fourteen years ago was laid up two days with an attack diagnosed as cholecystitis at Rochester Minn., when nurse in Mayo Clinic. Four years later had a similar but milder attack. Recently had nausea for several days and one attack of vomiting of a little bright blood, then began to have constant dull pain in the epigastrium and soreness over the gallbladder region, together with occasional pain in the right side and catching of the breath on deep breathing. At the end of the tenth day of sickness jaundice appeared with the passage of dark urine and clay-colored stools.

Tenderness became extreme over the region of the gallbladder and to a less degree under the angle of the right scapula. The temperature and leucocyte count were normal. The pulse was 80 and of good quality. Urine contained an excess of bile pigment and a trace of sugar. The direct van den Bergh test was biphasic and the indirect showed 15.5 mg. bilirubin in 100 c.c. of serum. The icterus index was 25. Hemoglobin and red cell count were normal and Wassermann test negative. The coagulation time was nine minutes.

The patient did not seem very sick, was bright, had fair appetite, slept well and complained only of weakness, jaundice and occasional vomiting. The jaundice was rather intense but not greenish or abnormal in hue. On the nineteenth day of sickness and fourteenth day of jaundice the patient awoke in the morning confused and remained in a somnolent state for several hours, and then seemed as bright as before. On the next day she was wholly comatose with rapid pulse, retention of urine, and constantly throwing herself about. This state continued unabated with failing pulse and respiration until she died 40 hours later.

The patient was explored by Dr. J. Tate Mason at the writer's request the day previous to her death. The liver appeared normal to sight and touch except somewhat less than normal in size. There did not seem to be any sufficient evidence of acute yellow atrophy. The gallbladder was small, contracted and thick walled. There was swelling and fibrosis of the head of the pancreas. The common and hepatic ducts were free from stone. The patient was almost moribund before operation but blood transfusion and intravenous calcium chloride injections appeared to improve her condition for a while after operation.

Dr. O. J. West examined the liver which was smaller than usual but normal to touch and was not flabby or wrinkled. But the cut surface was bright yellow from bile staining, so characteristic of acute yellow atrophy. Microscopically the diagnosis of acute yellow atrophy was confirmed by showing wide destruction and necrosis of liver tissue, and marked fatty changes in the cells, some of which were reduced to a mere structureless fatty debris.

This case was of interest chiefly in the matter of diagnosis. There had been existing a chronic cholecystitis and, in the absence of fever, stone in the common duct, chronic pancreatitis, carcinoma of the head of the pancreas and acute yellow atrophy were considered in the differential diagnosis of the cause of jaundice. According to Osler, the characteristic symptoms of acute yellow atrophy are "jaundice with vomiting, diminution of liver volume, leucin and tyrosin in the urine." In this case diminution in liver volume was not marked, vomiting was absent and no leucin and tyrosin crystals were present in the urine during life, although searched for. Cabot says that stupor is only seen in jaundice due to cirrhosis of the liver and acute yellow atrophy but we have seen it in jaundice from common duct obstruction.

Diagnosis of acute yellow atrophy during life was not possible. There was not sufficient destruction of the liver tissue in this case to give rise to leucin and tyrosin in the urine. One or the other is present in 72 per cent of cases, and both are absent in 28 per cent of acute yellow atrophy. The van den Bergh test being biphasic pointed to a toxic hepatic jaundice and spoke against an obstructive jaundice. No definite diagnosis was made antemortem.

Case 6. Cirrhosis of the liver (luetic), malarial splenitis, prostatic hypertrophy. Man, 66. Four years ago this patient was in the hospital under my care with watery diarrhea; abdominal distention and pain in the back. His abdomen had been increasing in size for one month. The pain in the back had only existed a few days. The patient had malaria of two years duration about twenty-five years ago. He also had a strongly alcoholic past, in which he used to drink gin before breakfast.

Physical examination showed an emaciated old man with slightly icteric sclera and skin. The pupils were somewhat irregular but reacted to light. The reflexes were normal. The abdomen was distended throughout and contained fluid. The spleen extended some five inches below the costal margin. The liver was felt about four inches below the ribs, and the border was irregular and somewhat nodular but not hard. Proctoscopic examination showed an ulcerated area in the rectum a few inches above the anus. The stools were negative for parasites. The blood count gave three and a half million red blood cells, 3,250 leucocytes, and 75 per cent hemoglobin. The Wassermann reaction was 3 plus. The urine contained some pus and blood but the renal function 'phthalein test gave 55 per cent return in two hours. The prostate was enlarged and the patient had been catheterized often. Blood pressure was 140 over 70.

The diagnosis was probable cirrhosis of the liver of luetic origin and the patient was put on salvarsan, mercury and iodides continuously for the next six months. The result was quite spectacular and he was discharged so greatly improved that he was able to work for the next four years,.

the ascites having disappeared and the liver being reduced greatly in size but still palpable. The spleen was not altered in extent.

Recently he entered the hospital again, complaining of pain in his back and legs, with distended belly from moderate ascites. He showed no icterus. The spleen was as large as ever but the liver border was palpated about two inches below the ribs. The urine contained a large trace of albumin but the urea nitrogen was but 18 mg. in 100 c.c. The blood count was 2,600,000 red cells, 6,000 leucocytes and the hemoglobin was 70 per cent. The Wassermann test was negative on two occasions. He was given novasurol twice a week and after a month the ascites disappeared and he was discharged greatly improved.

The chief interest in this case lies in the fact that this patient had a luetic liver and malarial spleen. On account of the ulceration in the bowel the case had been diagnosed as secondary malignancy of the spleen and liver. The patient had been cognizant of the "ague cake" for twenty-five years and had been told by a number of physicians of his large spleen during and following his malaria. While we have no absolute proof of the luetic nature of his liver trouble and ascites, it would seem that the curative effect of specific treatment should satisfy diagnostic doubters. Ague cake we have seen in several other cases, where the spleen has been greatly enlarged for many years and where it has caused confusion in diagnosis, associated with an enlarged liver from other causes. The last case was one of lymphatic leukemia.

Obstructive Jaundice

Case 6. Carcinoma head of pancreas. Male, 58. Trouble began about six months previously, when the patient became severely constipated for the first time and suffered from loss of strength and energy, all of which have continued increasingly since.

From the onset of trouble he has had a dull "heavy" pain in the upper right abdominal quadrant, never severe or colicky, and has also had much gas and rumbling in the bowels. He has lost 32 pounds since his sickness began. The appetite is very poor. About ten days ago he noticed he was becoming very yellow and this color has been deepening gradually. He also suffers greatly from itching. There has been only occasional vomiting. His urine is dark and his stools are clay-colored.

He never has had any serious sicknesses except pneumonia, chancre thirty years ago and gonorrhea. For several years he has had difficulty in passing urine.

Physical examination: Emaciated, jaundiced man with slight systolic murmur at apex. Neck and chest otherwise negative with no glandular enlargements. The abdomen is flat and the border of the liver is found to be a full hand's breadth below the costal margin, while below this a large pear-shaped mass is easily felt. The liver margin is smooth and no nodules are present. The prostate is very firm and large. Knee jerks are absent but Romberg sign is negative.

The urine contained some pus and bile pigment. The hemoglobin was 55 per cent; there were 3,552,000 red blood cells and 14,650 leucocytes. The Wassermann reaction was not recorded. The stools contained no free fat.

A diagnosis of carcinoma of the head of the pancreas was made and operation advised. At operation the pancreas was found to be very hard and nodular and the head enlarged and compressing the common duct. No metastases were found in the liver or elsewhere. The gallbladder was enormous but contained only colorless, glairy, viscid fluid without stones. Cholecystoduodenostomy was done. The patient died three days later and autopsy was not obtained.

This is a typical case of carcinoma of the head of the pancreas and accords perfectly with Courvoisier's law of large gallbladder in noncalculous obstruction of the common duct, occurring in 92 per cent of cases, while in calculous obstruction the gallbladder is found shrunken in 80 per cent of patients.

Carcinoma of the head of the pancreas the writer has found the most common cause of painless obstructive jaundice in the aged and middle aged. Cabot, however, in his analysis of the cause of 661 cases of jaundice finds 17 cases due to cancer of the pancreas and 26 to cancer of the bile ducts and gallbladder. It may be that cancer of the gallbladder is less apt to cause painless jaundice because it is associated with the presence of gallstones (70 to 91 per cent Courvoisier).

Carcinoma of the pancreas is chiefly distinguished from stone in the common duct by absence of severe pain and symptoms of infection, and by constant instead of intermittent jaundice and by more rapid emaciation. But all these signs often fail. We have seen several cases of continuous painless jaundice with great emaciation, where operation not only demonstrated the cause to be stone in the common duct but also cured the patient.

Notwithstanding all the newer diagnostic tests and methods, our knowledge is insufficient to enable us to make a reliable differential diagnosis in many patients with obstructive jaundice. As Moynihan observes in his Abdominal Operations (1926), the doctor "may shrewdly guess but a guess is a poor peg on which to hang a man's life. All cases of obstructive jaundice should be treated by operation."

Case 7. Cancer of the head of the pancreas and liver, cholelithiasis. Man, 73. Had an attack of gallstone colic seven years ago. About a month ago had a sudden seizure of moderate pain in the epigastrium, accompanied by jaundice for the first time. Two weeks ago the jaundice cleared up for a few days and then returned. The urine is dark and the stools are clay-colored.

Physical examination shows a well nourished but moribund old man, with marked jaundice. The liver extends a hand's breadth below the costal margin and is smooth and somewhat tender. Otherwise the physical examination is practically negative. The patient was in hospital three days when he died.

The history of gallstone colic seven years ago and the sudden onset of pain and obstructive jaundice led us to make a tentative diagnosis of stone in the common duct, especially with the history of intermittent jaundice. Autopsy showed cancer of the head of the pancreas with metastases in the liver and chronic cholecystitis. The gallbladder was filled with stones.

It is improbable that a correct diagnosis could have been made without operation or autopsy and this case is mentioned to emphasize the necessity of operation to determine the cause of obstructive jaundice. It is even now a question whether stone entered into the causation of the jaundice.

Case 8. Carcinoma of the galbladder and liver. Cholelithiasis. Woman, 63. For last three months has been losing weight and strength and has been nauseated at times. For the past six weeks has had constant pain in the upper abdomen, which radiates to the back and downward, and is nauseated after taking food.

Jaundice began two weeks ago and has been increasing in intensity ever since. The patient is greatly emaciated and the liver border can be felt some two inches below the costal margin, and below this but continuous with it a tumor mass about as large as an orange, hard and nodular, may be palpated.

The laboratory findings are unimportant except for the presence of secondary anemia, urine loaded with bile pigment and clay-colored stools. The gastric contents contained free HCl 40, an unusual finding in such a case. The history would at once suggest malignancy and the presence of a hard nodular mass in the region of the gallbladder spoke for carcinoma of this viscus. The patient lived only ten days after entering the hospital and autopsy showed a cancer of the gallbladder with small lumen filled with stones and most extensive metastasis in the liver.

Gallstones occur in 70 to 91 per cent of cases of cancer of the gallbladder (Courvoisier), jaundice in 69 per cent, and palpable tumor in 66 per cent of cases of gallbladder cancer (Edwards).

Cancer of liver. This case should have properly been included under the head of hepatic jaundice but is added here because it has occurred since the previous matter was printed. It is of special interest as the van den Bergh test proved of great value in the diagnosis by showing the presence of jaundice and jaundice of the hepatic rather then of the obstructive type.

Case 9. Man of 65. He never remembers having had a sick day in his life and this usually indicates the presence of a serious condition when such individuals resort to the doctor. He began to suffer a wholly unaccustomed lassitude three weeks ago. He is ruddy, robust looking and weighs 200 lbs. His appetite is good, he has lost no weight but has an indefinite discomfort in his epigastrium with some belching of gas and mild headache. He came to me because his wife discovered he had fever daily, ranging from 99.5° in the morning to 101.5° at night, and this has continued during the month he has been under observation. He also has a moderate, hacking cough. An umbilical hernia became apparent two months ago and has become more prominent recently.

Fever then was the chief presenting symptom and diagnosis was attempted on that basis. Physical examination showed two devitalized teeth, and markedly infected tonsils exuding pus on pressure. Heart and lungs were negative and also abdomen. The liver and spleen were not palpable. Pulse was 120 but no symptoms of shortness of breath or other heart symptoms were discovered. Blood pressure 150 over 90. No glands palpable anywhere and rectal examination negative. Urine negative. Sclera slightly icteric but van den Berg test showed normal bilirubin content of blood (0.4 mg. in 100 c.c.). Several agglutination tests were made for paratyphoid, typhoid and undulant fever and were negative. Blood culture was negative. Radiogram of chest and gastrointestinal tract negative, also cultures of stools and urine. The sputum showed numerous streptococci and M. catarrhalis but no tubercle bacilli.

Blood contained 4,890,000 red cells and hemoglobin of 95 per cent. Five leucocyte counts were all within normal limits and differential count was also normal. The gallbladder was not visualized by x-ray and dye.

The upshot of all this was that after a month of study we were no nearer a diagnosis than at the beginning and admitted this fact. Then one morning the patient noticed edema of the prepuce. At the same time the sclera seemed more distinctly icteric. A second van den Berg test gave a biphasic reaction seen in hepatic and not obstructive jaundice, and also showed 2.2 mgm. of bilirubin in 100 c.c. of serum, a distinct latent jaundice. The urine was dark and foam yellowish, but the feces retained normal color. A moderate ascites was also discovered.

With the presence of jaundice and ascites the liver was naturally thought to be the source of the trouble. We believed the heart and kidneys could be excluded as causes of ascites. Then the chief causes of icterus and ascites of liver origin are portal cirrhosis, syphilis and cancer. We excluded syphilis by a negative Wassermann reaction which is 90 per cent positive in this condition (Stokes). We ruled out cirrhosis on absence of characteristic symptoms and nonalcoholic history. We made a positive tentative diagnosis of cancer of the liver by exclusion which was favored by the age. We also concluded that the ascites was due to portal obstruction from lymphatic metastatic growths.

This diagnosis was presented to the family and an exploratory operation was advised in case some unusual condition might be relieved by operation. Beginning obstructive jaundice from stone or cancer of the head of the pancreas was contraindicated by the biphasic van den Berg reaction and is rarely associated with ascites. Consultation was at the same time advised to confirm our diagnosis.

Two very able consultants were at first inclined toward a cardiac origin of the trouble. The rapid pulse and heart pushed up and out by the ascites suggested cardiac involvement. But it seemed to the writer that an entire absence of heart symptoms at the beginning of the trouble, followed by a long rest, without enlargement of the liver or of visible veins in the neck, the absence of rales in the base of the lungs and of tenderness over the liver, and especially the presence of jaundice, excluded a cardiac etiology. Furthermore there was no lowering of blood pressure with appearance of ascites and edema of the legs.

Icterus is common in long continued passive congestion and enlargement of the liver with decompensating heart but is not observed in the absence of this condition in cardiac cases in our experience.

Dr. Forbes explored the patient under spinal anesthesia with no shock or unfavorable effect resulting. He found the liver studded with malignant growths, and many large lymph nodes in the region of the portal vein confirming our diagnosis precisely. We are still ignorant of the site of the primary focus, as the stomach, pancreas and gallbladder appeared to be normal at operation. The patient some days after operation began to have constant hiccough, probably from vagus or phrenic irritation by mediastinal metastases, or through reflex irritation from the liver lesions.

USES AND ABUSES OF ULTRAVIOLET RAYS*

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As a result of widespread and intensive newspaper advertising, supplemented by skillful salesmanship, the opinion has been developed among some physicians and has been quite generally accepted by the public, that ultraviolet light possesses a mysterious, powerful energy for the general control and relief of conditions of disease. While this energy is effective in the treatment of certain ailments, it has distinct limitations which require its use with caution. Consequently a review of the latest information regarding ultraviolet therapy will be timely.

From days of antiquity it has been known that certain diseases have been relieved by exposure of the body to the sun's rays. Within recent years it has been learned that these beneficial results are due primarily to the ultraviolet rays, derived from the region beyond the violet of the solar spectrum. It was a wonderful discovery, productive of profound therapeutic possibilities, that an electric current passing through a vacuum quartz tube containing mercury can vaporize this metal, thereby producing rays of light identical with the ultraviolet rays of the sun.

The long wave lengths thus produced from the quartz tube are employed for the production of constitutional and metabolic results. At the same time the short wave lengths, producing effects different in some respects from those of the long wave lengths, cannot be employed from this lamp on account of the heat evolved in close proximity to the body. Therefore, a quartz tube surrounded by a jacket of cold water, which cuts out the heat rays, renders available the short wave lengths in what is termed the water-cooled quartz lamp.

The question naturally arises, how do these ultraviolet rays enter the body and what results do they produce. Formerly the answer was that the skin was penetrated by these rays of light, which were absorbed by the blood stream, producing certain results difficult of explanation. At the same time it was believed that the ultraviolet rays did not penetrate to a depth greater than 0.1 mm. Recently Macht, Anderson and Bell,[1] by experiments with these rays on the skin of living, anesthetized rabbits, have demonstrated by means of the spectrograph and thermopile that the ultraviolet penetration is much greater than hitherto reported. They have found sufficient penetration to reach the superficial capillary circulation, the shorter rays penetrating through living tissue more deeply than the long rays.

These facts, however, do not solve the problem under consideration. The present accepted theory is that all living cells contain an alcohol, cholesterol, which has the property of absorbing ultraviolet light, resulting in production of the activating agent, classified among the vitamins and designated as vitamin D. This is absorbed by the circulating blood and among other results produces activation for the deposit of calcium in the tissues of the body. This is particularly noted in the bones, thus providing a prophylactic and curative effect especially observed in rickets.

It has been found, however, that this result does not obtain with pure cholesterol, but depends upon the presence of an impurity, named ergosterol. This substance is also found in certain fungi, yeast and mushrooms. It appears most abundantly in the grain fungus, ergot. This activated ergosterol is said to be 2000 times as potent as cholesterol and 100,000 times more active than cod-liver oil. Thus one ounce of activated ergosterol is said to be equivalent in potency to several tons of cod-liver oil. Administered in cases of rickets in infants, irradiated ergosterol has proved preventive as well as curative in very small doses, all signs of the disease disappearing more rapidly than by use of cod-liver oil.

It has been known empirically for a long period that cod-liver oil is effective in the treatment of rickets and other diseases of malnutrition. How does vitamin D enter the liver of the cod, whose life cycle is spent beneath the surface of the water, never exposed to the rays of the sun? It is known that the surface of the ocean is covered with myriads of a microorganism known as plankton, which are irradiated by the sun, developing in them vitamin D. From them the squid obtains its nourishment, including this vitamin. The cod in turn feeds on the squid, from which it receives this activating agent.

Every cell of the human body contains cholesterol. The skin is thus a great storehouse of this substance, in whose cells the ultraviolet rays develop vitamin D which is absorbed through the capillary circulation and thus enters into the metabolic processes of the body. Hess and Lewis[2] say it has been found that irradiation causes ergosterol continually to be activated and deactivated, absorption appearing at one point and disappearing at another, finally to disappear entirely after prolonged irradiation.

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* Read before King County Medical Society, Seattle, Wash., April 8, 1929.

It is claimed that one of the functions of the parathyroids is the control of calcium metabolism. It is well known that the administration of Collip's parathyroid preparation produces marked increase of blood calcium in man and animals. It is believed by some investigators that the function of irradiated ergosterol is to stimulate the parathyroids and perhaps other glands by regulating calcium metabolism. These claims seems to be substantiated by the experimenter who administered calcium to a monkey and after ultraviolet irradiation noted a marked increase in blood calcium content. Then the parathyroids were excised, after which ultraviolet irradiation failed to produce the calcium increase. It was thought this result was due to the parathyroid removal. These facts suggest that the calcium increase by means of vitamin D obtained from ultraviolet irradiation may result from its action on the parathyroids.

Ultraviolet irradiation produces an increase of calcium, inorganic phosphorous, iron and iodine content of the blood. Fairhall[3] says that a higher level of calcium absorption and higher degree of utilization result from a low calcium diet. There is also observed an increased hemoglobin, red blood cells, platelets and white blood cells, especially of the lymphocytes. There is a decrease of the blood coagulation time. At the same time is noted a general feeling of buoyancy and wellbeing. It is claimed there is an increased activity of the endocrines with promotion of general metabolism.

Beside the prophylaxis and cure of rickets in children, successful results follow this treatment in tetany, osteomalacia and spasmophilia. All forms of malnutrition, marasmus and anemia of children are improved. It is particularly effective in secondary anemias. General irradiation is beneficial in all forms of surgical tuberculosis, as of glands, intestines, bones and joints. Tuberculous peritonitis will often show an astonishing and rapid improvement following exposure to ultraviolet. There are some forms of chronic pulmonary tuberculosis that are benefited by this form of treatment. Patients subject to repeated colds and chronic bronchitis often are relieved by this therapy, especially in nontuberculous conditions. There are some asthmatic patients who fail to respond to established methods of treatment, who will improve under general irradiation, together with nasal applications from the air-cooled quartz tube. Patients with general debility and convalescents from infections and surgical operations generally improve by its use.

Local irradiations are of value in a wide range of chronic skin diseases and infections, best results being obtained in association with established constitutional and other local treatments. Thus attacks of psoriasis are commonly relieved and some cases of chronic eczema, though it is generally considered unfavorable for acute cases of this disease. Often pruritis of varied etiology is benefited by its application. Relief of many skin affections is due to the bactericidal effect of the water cooled tube. It is stated that no bacteria will survive the direct application of ultraviolet short wave lengths which are more destructive to microorganisms than boiling or the commonly used antiseptics. Ultraviolet is claimed to kill spores as well as the germs. Hence it is applicable in the treatment of many bacterial infections, particularly if the rays, by means of the quartz rod, can be brought into immediate contact with their location. Thus it has been found useful in many infections of teeth and gums, including pyorrhea, gingivitis, ulcers, cellulitis and Vincent's angina.[4] Dental caries is amenable to general ultraviolet treatment, since this is due to calcium deficiency.

Much has been written of the benefit of the ultraviolet radiation in cases of x-ray dermatitis, attributed to the fact that the x-ray is destructive in its action while ultraviolet is regenerative. Burns from the application of heat are relieved by ultraviolet rays, while dermatitis from the rays of the sun or excessive application of ultraviolet is aggravated by this line of treatment. It is noted that the most effective relief from this form of dermatitis follows the use of tannic acid preparations.

Many other uses of this agency might be presented, the details of which will not be considered at this time, but this array of facts offers a general outline of the conditions of disease to which it is applicable. At the same time we should consider that there are positive contraindications to its use, while deleterious effects may result from its too long application.

As a general rule the effect on the skin is a guide for the limit of its use. One is cautioned to avoid tanning of the body and to make a moderate dermatitis the limit of its application. Willmoth[5] states that erythema remaining after ultraviolet irradiation simulating pellagra may develop into this condition, caused by the action of ultraviolet on the phenylalanin in the skin.

Beinhauer[6] claims that overtreatment may produce unfavorable local reactions with possible localized gangrene, ulceration or keratoses, accompanied by anorexia, fatigue, restlessness, general debility, insomnia, nervous irritability, loss of weight, progressive weakness. He emphasizes the necessity of determining the patient's reaction at the beginning of treatment.

Writers are all agreed that it should not be used in acute pulmonary tuberculosis, especially in the presence of fever or the liability of hemorrhage, the latter being prone to increase from its application. Any condition subject to hemorrhage is a contraindication. The warning is given not to administer it during the menstrual period. Diabetics should not be treated by ultraviolet rays. It is said that sugar has been increased by its use, often from short exposures. Highly nervous patients may be made worse by it. It is said that no patient with uncompensated endocarditis should be subjected to this irradiation. Hyperthyroid subjects should not have general irradiation, as dangerous symptoms may be produced. The employment of this agency in the treatment of rickets must be conducted with caution. Morse[7] states that overexposure of children during long periods of irradiation may cause an excessive deposition of calcium in the long bones, with constitutional symptoms of fever and loss of weight, and may interfere with or prevent the normal growth in length.

Gonce and Kassowitz[8] claim that the bactericidal property of the blood has a direct relationship to the number and character of leucocytes. After prolonged ultraviolet irradiation this bactericidal property is decreased. This result is found after continuous daily quartz irradiations for more than four weeks, while normal persons free from any infection are apt to show improved bactericidal properties after continuous irradiations. Those suffering from chronic and postoperative infections are apt to show a drop in bactericidal properties after daily quartz lamp treatment.

Pfannenstiel states that small doses of ultraviolet raise the bactericidal powers of the blood, while large doses may cause severe intoxication. He found that 5 mg. per kilogram of body weight of irradiated ergosterol was fatal for rats, cats and dogs. At postmortem extraordinary deposits of calcium were found in blood vessels as well as heart, stomach, lungs, kidneys and muscles. While large amounts would be needed for serious effects on man, yet a warning should be sounded against too great exposure to ultraviolet rays as well as against too great intake of vitamin D or any other vitamin.

In view of the possible unfavorable results of excessive, unintelligent application of ultraviolet light, one might raise the question as to the advisability of recommending the quartz lamp for family use commonly unsupervised, as is frequently done. If the family possess this apparatus and the spirit of economy prevails, as indicated in the desire to avoid unnecessary medical expenditure, ultraviolet applications may result in harm rather than good. The same criticism is applicable to the custom, established in some cities on the part of clubs and distributors of apparatus, of setting up batteries of ultraviolet lamps where the tired business man is invited to receive the benefits of "bottled sunshine," during the noon hour or at other convenient season. Since this employment of a strictly medical measure will commonly be unsupervised, the potentially possible deleterious effect may be visioned.

The future development of ultraviolet applications may be along lines of special therapy not yet perfected for practical use. The physicists tell us that the ultraviolet spectrum is composed of distinct bands of light, each with its own therapeutic applicability, depending upon its particular wave length. Therefore, our present use of ultraviolet light for the relief of varied pathologic conditions may be analagous to the shotgun prescription which is prescribed with the expectation that some of its ingredients may be effective for the disorder under treatment. If the physicist can successfully isolate the component bands of light, making them separately accessible for therapeutic application, it is possible that yet more notable, specific results may be obtained from their employment.

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PREVALENCE OF VENEREAL DISEASE IN OREGON*

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In an effort to secure more accurate information than heretofore has been available concerning the prevalence of venereal disease in the United States, the Public Health Service during the past three years has been taking, in representative communities, a census of persons under treatment for gonorrhea or syphilis by private physicians or in public clinics on a given date. Oregon is, however, the only state which has been surveyed in its entirety for the prevalence of venereal disease. This sparsely settled state of the Northwest, with its three hundred mile Pacific coast line, a land area of 61,189,000 acres and a population averaging only ten inhabitants per square mile, may be considered in many respects representative of the West Coast and Mountain Division states.

METHOD AND DEFINITION OF TERMS

The method used in conducting the Oregon one-day census consisted in the sending of questionnaires to all physicians and institutions treating the sick, with the request that these be filled out as of a designated date and returned to the State Health Officer. The questionnaires covered a statement of the number of persons under active treatment or observation for venereal disease by sex, diagnosis and stage of the disease as of June 15, 1927. The stage of infection was arbitrarily defined, for the purpose of the survey, as "early syphilis," when one year or less had elapsed since the approximate date of infection. Cases of gonorrhea were referred to as "acute," if six months or less had elapsed since the approximate date of infection and as "chronic," if more than that time had elapsed.

COMPLETENESS OF RETURNS AND LIMITATIONS OF THE SURVEY

Oregon has a population of 877,682, of which 296,000 persons reside in Portland; the remainder are scattered over the rest of the state. The average population per physician is 1,088, ranging from 570 persons per physician in Lake County to 3,800 in Curry County. Table 1 indicates that of the 916 physicians to whom questionnaires were sent, 88 per cent reported the status of their cases. Only 47 per cent of the osteopaths and chiropractors reported. However, although it is most desirable to have reports from all physicians in the conduct of a prevalence survey, a complete response from osteopaths or chiropractors is not considered essential, as previous studies have indicated that the number of veneral disease cases under the care of these practitioners is negligible. Of the 4,157 cases reported under treatment in this survey 92 per cent were under the care of private physicians, 6.6 per cent in public clinics and 1.4 per cent were being treated by chiropractors and osteopaths.

This study did not include any venereal disease cases under treatment in public clinics other than those devoted exclusively to venereal disease work, hospitals for the insane, jails or local prisons, state penitentiaries or other state prisons. In three other states, in which surveys have been made and in which an attempt was made to secure the venereal disease cases under treatment in these centers, the percentage of such cases to the total venereal disease cases ranged from 11 per cent in New York to 3.7 per cent in Mississippi and 0.4 per cent in Tennessee. These percentages of cases of venereal disease not under the care of private physicians or in public venereal disease clinics indicate that the Oregon study is from 1 to 11 per cent incomplete, insofar as cases under treatment are concerned.

Based on the Bureau of Census report on "Patients in Hospitals for Mental Disease" as of January 1, 1923, the cases of general paralysis and psychoses with cerebral syphilis in the three institutions for mental diseases in Oregon, which were not included in the survey, would add approximately 130 cases, or 3 per cent, to the total of 4,157 cases of venereal disease under treatment. No effort has been made in this study to estimate the number of undiagnosed, untreated or self-treated cases of venereal disease.

DISTRIBUTION OF PRIVATE CASES

Table 2 reveals that 90 per cent of the private cases were under the treatment of 24 per cent of the physicians. In fact, less than 5 per cent of the physicians had 51 per cent of the private cases. There are, however, apparently few physicians who are specializing in the treatment of syphilis to the exclusion of gonorrhea or vice versa. Among the 807 physicians treating venereal disease there was one treating 31 cases of syphilis and one treating

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* Statistical analysis, tables and graphs by Miss Usilton; field work on questionnaires by Dr. Stricker.

TABLE 1. Source of reports on the number of cases of gonorrhea and syphilis under treatment or observation on June 15, 1927, in Oregon.

Source	Questionnaires sent	Questionnaires returned	Percentage of questionnaires returned	Number reporting no cases	Number reporting one or more cases	Percentage of each source reporting one or more cases	Number of cases	Percentage of cases reported by each source
Total	1366	1018	74.5	609	409	40.2	4157	100.0
Physicians	916	807	88.1	417	390	48.3	3824	92.0
Other private practitioners	449	210	46.8	192	18	.8	60	1.4
Public Clinics	1	1	100.0	....	1	100.0	273	6.6

TABLE 2. Distribution of physicians by cases showing those physicians reporting cases under treatment for syphilis only, for gonorrhea only, or for both, on the date of survey.

Number of cases	Distribution of physicians by cases reported		Physicians having under treatment cases of Gonorrhea only		Syphilis only		Gonorrhea and Syphilis		Number cases of Gonorrhea and Syphilis under treatment	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Total	807	100.0	91	100.0	93	100.0	206	100.0	3824	100.0
1- 4	198	24.5	79	86.8	70	75.3	49	23.8	407	10.6
5- 9	95	11.8	11	12.1	16	17.2	68	33.0	601	15.7
10-14	36	4.5	1	1.1	4	4.3	31	15.0	442	11.6
15-19	23	2.9	....	....	1	1.1	22	10.7	396	10.4
20-49	26	3.2	....	....	1	1.1	25	12.1	717	18.7
50 or over	12	1.5	....	....	1	1.1	11	5.3	1261	33.0
None	417	51.7	....	....	....	....	....	....	....	....

86 cases but neither had any cases of gonorrhea. However, there was no physician reporting more than 12 cases of gonorrhea who was not also treating syphilis.

STAGE OF INFECTION AND CASE RATE OF PRIVATE PRACTICE CASES

The stage of infection was not reported for the public clinic cases. Therefore, the percentages and comparisons of rates have been based on the cases of private physicians. Since the private practice cases constituted 92 per cent of the total cases reported under treatment, it is believed that their distribution by stage of infection was fairly representative of the total cases under study.

The cases of gonorrhea which had developed within six months next preceding the census constituted 60 per cent of the total cases among the males and 49 per cent among the females. Among the syphilis cases the group in which infection developed more than a year prior to the taking of the census was found to be the largest. For the males these cases amounted to 70 per cent of the total, while the percentage among the females was 78, as may be seen from table 3.

In table 4 the case rate for venereal disease per 1,000 persons is higher for the males than for the females under treatment in private practice. The rate is 5.60 for the males and 2.95 for the females. The case rate for gonorrhea in the males under treatment is slightly higher for the acute than chronic ones, whereas the reverse of this is true among the females. The case rate for late syphilis in both the males and the females is much higher than for early syphilis. These facts are shown graphically in fig. 1.

TABLE 3. Cases of venereal disease under treatment in private practice with the percentage in each stage of the disease by sex of patients and diagnosis.

Gonorrhea and Syphilis	*No. of Cases*	*Per cent*
Male	2610	100.0
Acute and early	1199	45.9
Chronic and late	1411	54.1
Female	1214	100.0
Acute and early	423	34.8
Chronic and late	791	65.2
Gonorrhea		
Male	1388	100.0
Acute	833	60.0
Chronic	555	39.9
Female	580	100.0
Acute	282	48.6
Chronic	298	51.4
Syphilis		
Male	1222	100.0
Early	366	29.9
Late	856	70.1
Female	634	100.0
Early	141	22.2
Late	493	77.8

TABLE 4. Cases of venereal disease under treatment in private practice in Oregon with the case rate per 1,000 population shown for each stage of the disease by sex of patient and diagnosis.

Gonorrhea and Syphilis	*No. of Cases*	*Rate per* 1,000
Male	2610	5.60
Acute and early	1199	2.57
Chronic and late	1411	3.02
Female	1214	2.95
Acute and early	423	1.03
Chronic and late	791	1.92
Gonorrhea		
Male	1388	2.98
Acute	833	1.79
Chronic	555	1.19
Female	580	1.41
Acute	282	.69
Chronic	298	.72
Syphilis		
Male	1222	2.62
Early	366	.78
Late	856	1.84
Female	634	1.54
Early	131	.34
Late	493	1.20

RATE FOR MALES IN OREGON COMPARED WITH THE RATE FOUND IN DRAFTEES

Through an analysis of the World War statistics on "Defects in Drafted Men," Love and Davenport obtained some venereal disease rates by diagnosis and by state of residence of the draftee. A comparison of the rates for venereal disease determined by our study in Oregon with the rates for draftees from Oregon necessitated a correction for sex and age. An age factor based on new cases reported during a four year period to the state boards of health of twelve states was found. The male rate for age 20 to 29 to the rate for all ages was used for adjusting our rates.

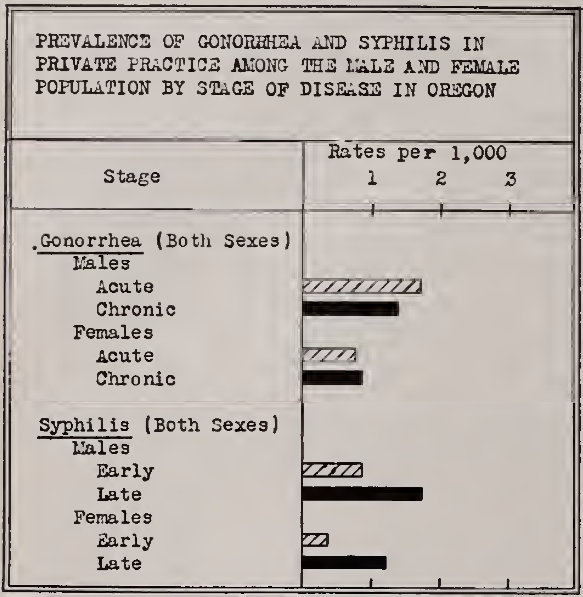


Fig. 1.

The ten-year age period, 20 to 29 years, was selected because it includes 82 per cent of the draftees on admission, at which time the defects were recorded for the Army statistics. The rates for males of Oregon found in our study, approximated by this age factor, are compared with the draftee rates as follows:

Diagnosis	Cases per 1,000 males in Oregon, 1927	Age factor (20-29 yrs.)	1928 Oregon rate adjusted by age factor	Cases per 1,000 draftees from Oregon
Gonorrhea	3.06	3.48	10.64	10.30
Syphilis	2.89	2.27	6.56	2.17
Total venereal disease	5.95	2.99	17.79	12.47

From a comparison of the adjusted rate with the rate found for the Oregon men, included in the approximately first and second million (1,961,692)

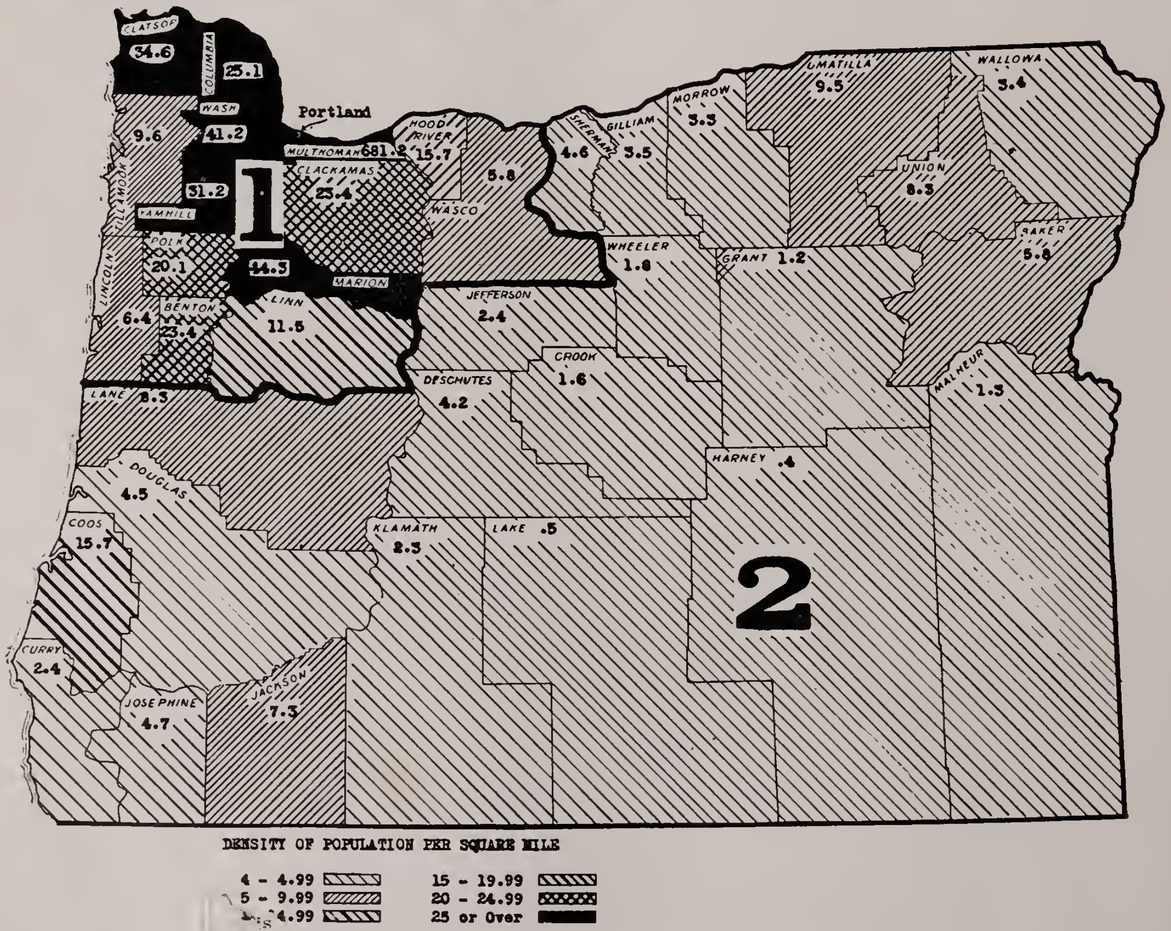


Fig. 2, a. The density of population per square mile in Oregon.

inducted men examined by medical boards at camps and also in the men rejected by the local boards (549,099), it may be assumed that a reasonably high percentage of gonorrhea cases now are presenting themselves for treatment in Oregon. The adjusted rate for syphilis among the males of Oregon is more than three times as high as that found among the draftees.

The following statement from the volume on "Defects in Drafted Men," page 78, in which these rates are evaluated, indicates Love and Davenport's confidence in the completeness of the gonorrhea figures and their doubt as to the recognition of all the syphilitic cases. "While the amount of syphilis recorded is not great, it must be recognized that the methods of diagnosis were not fully adequate for the detection of the disease. It seems probable that only the more obvious cases were recorded. In the case of gonorrhea infection, however, recent acute infections were sufficiently obvious and the methods employed at the time of physical examination were usually sufficient to detect even chronic cases."

CORRELATION OF PREVALENCE OF VENEREAL DISEASE WITH DENSITY OF POPULATION

Oregon has two rather sharply defined sections based on the density of population. Let us for convenience in discussion number these two sections 1 and 2 (figs. 2a and 2b). These maps depict the two sections, first, with respect to density of population and, then, from the standpoint of prevalence of venereal disease.

It will be noted that section 1 is fairly well populated. It consists of the fourteen counties of the northwestern part of the state and has an average density of population of 40.1 persons per square mile. In Multnomah County, with a land area of 434.5 square miles, the density of population is very high, there being 681 persons per square mile. Section 1 includes the region about the mouth of the Columbia River and 160 miles or more along its course through Wasco county. The Deschutes river flows through this region and enters the Columbia river twelve miles above The Dalles in Wasco county. There is also included in this section a large part of the valley of the Willamette

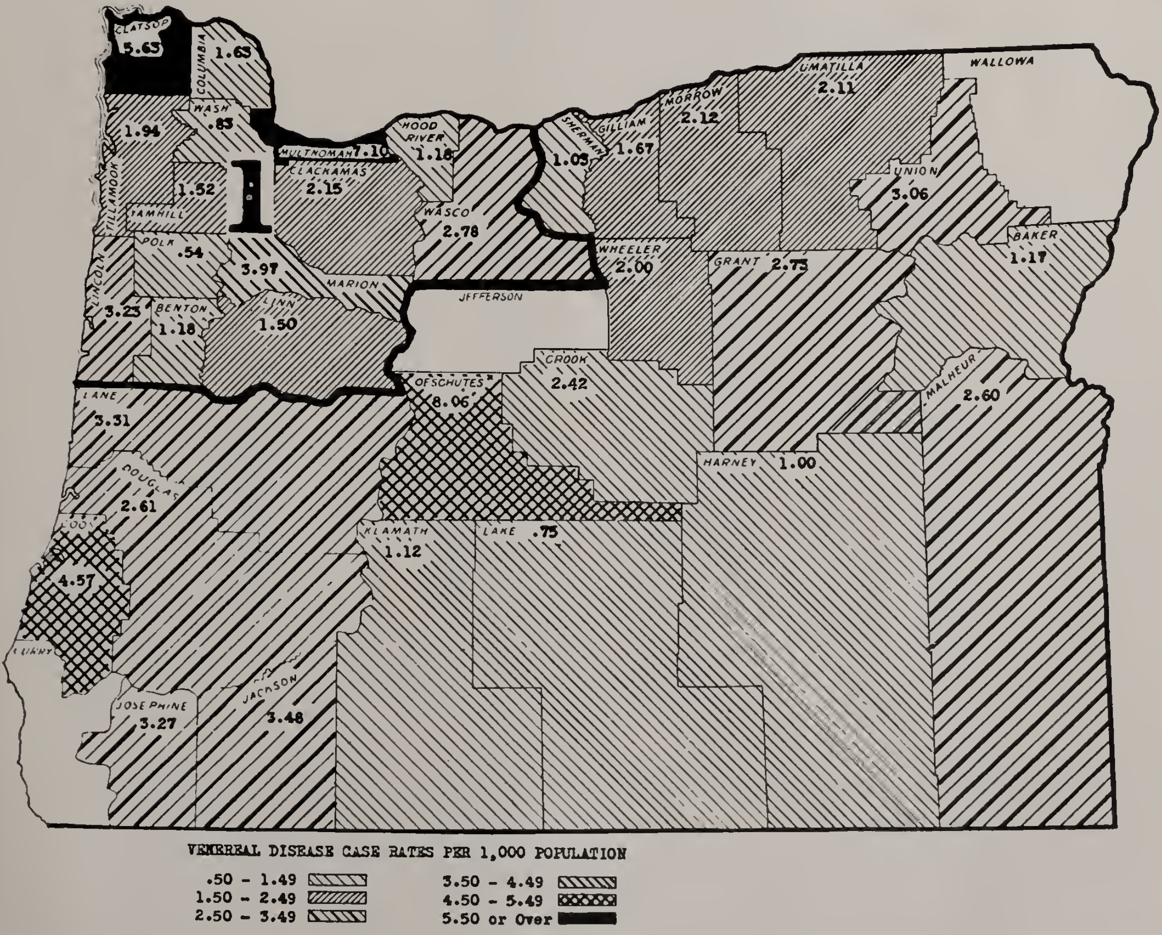


Fig. 2, b. Case rate for venereal disease per 1000 population in Oregon.

TABLE 5. Sectional division of Oregon, showing urban and rural population, average population per physician, percentage of physicians treating one or more cases of venereal disease.

POPULATION		Per cent Urban	Rural*	Number of Physicians	Average population per Physician	Percentage Physicians treating one or more cases	Cases under treatment per Physician
Total	877,682			807	1088	48.3	4.7
Section I	604,448	60.5	39.5	557	1085	48.7	5.4
Section II	273,234	27.2	72.9	250	1093	47.6	3.3

* As defined by U. S. Census Population Vol. II, 1920.

river, a region about 200 miles long and about 30 miles wide, which is the most thickly populated portion of the state.

Section 2 is sparsely populated; in fact, parts of it are unpopulated. It includes the Columbia river valley east of the county of Wasco, the coastal dry plain, the great sandy desert lying in parts of Crook, Lake and Harney counties, and the Snake river plains, embracing an area of 1,200 square miles, in Malheur county. This section includes twenty-two counties. The average density of population is 3.4 persons per square mile. The density ranges from less than one person per square mile in Harney and Lake counties to 15.7 persons in Coos County (table 5).

Although the land area of Section 2 is five times as great as that of Section 1, it has less than one-half as many inhabitants. The correlation of density of population with prevalence of venereal disease is .4709‡ P. E. .12 in Section 2 and .2145‡ P. E. .18 in Section 1.

This correlation of density with prevalence in Oregon is especially interesting for Section 2, since the very structure and development of this part of the state eliminates the disturbing element of migration of infected persons from more or less isolated places to the city for treatment. This element of migration has been met with constantly throughout our series of prevalence studies, making it difficult to determine the extent of inflation of the urban rate by migration. It will be noted that a fairly significant correlation exists between density in the less populated Section 2. Whether as significant a correlation for density would be found for the more populated rural communities of the United States is a matter of conjecture.

The population of Section 2 is 73 per cent rural, while that of Section 1 is 40 per cent. The division of rural and urban is based on the Census Bureau definition of 1920: "In drawing the distinction between urban and rural population, all incorporated places having 2,500 inhabitants or more are treated as urban and the remainder of the country as rural." Throughout each of our surveys it has been observed that the prevalence of venereal disease in rural communities has not been as great as in the urban ones. In table 6 the case rates for each of the sections, 1 and 2, for both gonorrhea and syphilis are given.

TABLE 6. Cases of venereal disease under treatment in private practice and in public institutions, with the rates shown for each Section by sex and diagnosis.

	No. of Cases	*Rate per* 1,000
SECTION 1		
Gonorrhea and Syphilis		
Total	3262	5.39
Male	2194	6.91
Female	1068	3.72
Gonorrhea		
Total	1574	2.60
Male	1107	3.49
Female	467	1.63
Syphilis		
Total	1688	2.79
Male	1087	3.43
Female	601	2.09
SECTION 2		
Gonorrhea and Syphilis		
Total	835	3.06
Male	583	3.91
Female	252	2.03
Gonorrhea		
Total	454	1.66
Male	321	2.15
Female	133	1.07
Syphilis		
Total	381	1.39
Male	262	1.76
Female	119	.96
BOTH SECTIONS		
Gonorrhea and Syphilis		
Total	4097	4.67
Male	2777	5.95
Female	1320	3.21
Gonorrhea		
Total	2028	2.31
Male	1428	3.06
Female	600	1.46
Syphilis		
Total	2069	2.36
Male	1349	2.89
Female	720	1.75

The total rate for venereal disease cases in Section 1 was 5.39, as compared with the 3.06 rate in Section 2. A division of the diagnosis by stage of the disease was not reported for the public clinic cases. However, among the private practice cases it was found that the male rate for acute gonorrhea among the patients in both Section 1 and Section 2 was higher than that for chronic gonorrhea. The rates for females under treatment for gonorrhea in both sections and for both stages of the disease were less than 1. The cases of syphilis in private practice in both sections were greater in number in the late stages than in the early ones (fig. 3).

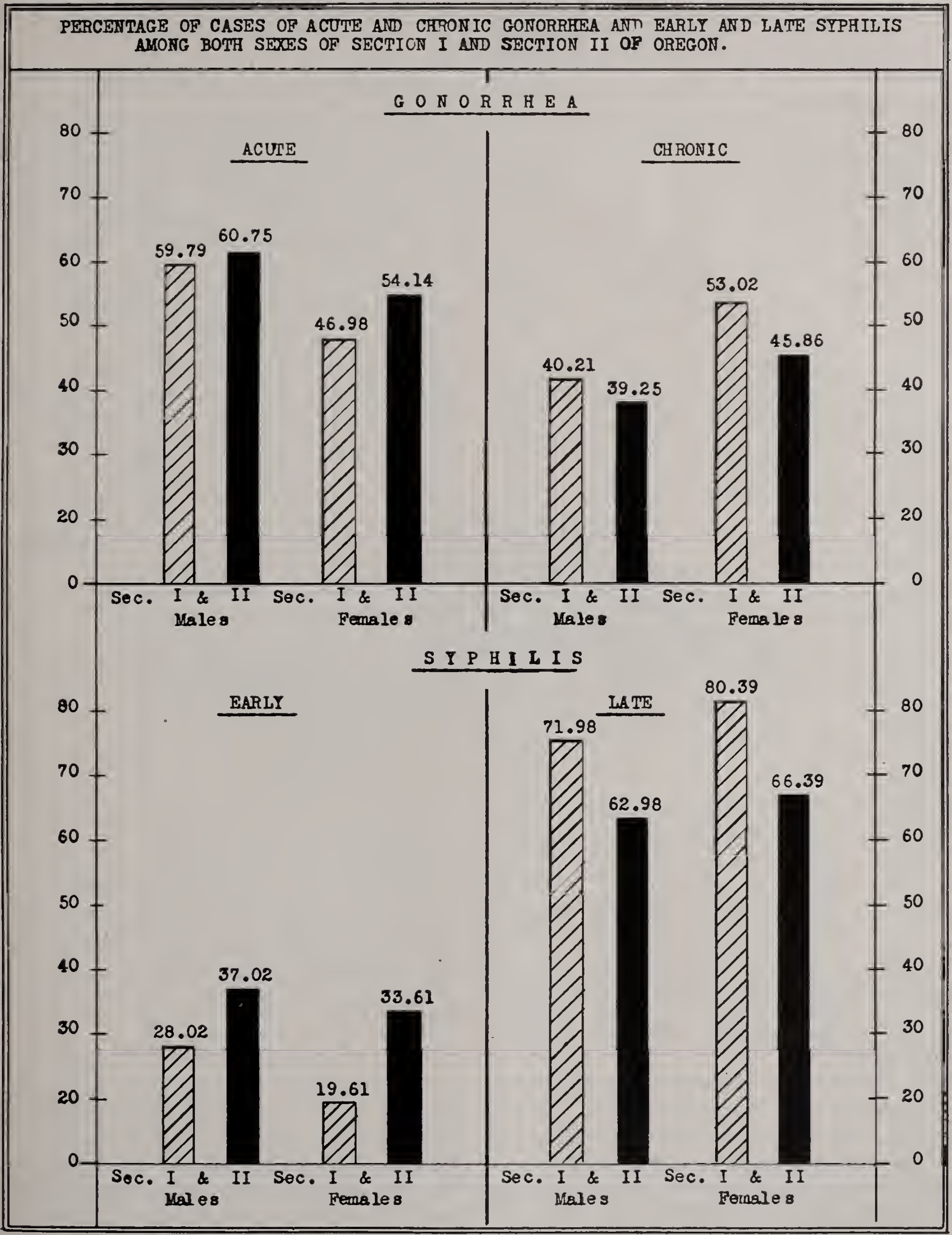


Fig. 3.

Table 7 indicates that the percentage of cases of gonorrhea that was acute and syphilis that was early was higher in Section 2 than in Section 1. This fact is presented graphically in figure 3. The higher percentage of the more recent infections of both gonorrhea and syphilis in the less populated Section 2 may be due either to the diagnosis being made in a larger percentage of the early cases in the rural territory than in the urban communities, or to the failure of the chronic or late cases to persist in treatment where facilities are inconvenient, as is often true of sparsely settled districts.

TABLE 7. Cases of venereal disease under treatment in private practice in Section 1 and Section 2 of Oregon, with the percentage of each stage by sex of patient and diagnosis of the disease.

SECTION 1

Gonorrhea and Syphilis	*No. of cases*	*Per cent*
Male	2027	100.0
Acute and early	907	44.7
Chronic and late	1120	55.3
Female	962	100.0
Acute and early	311	32.3
Chronic and late	651	67.7
Gonorrhea		
Male	1067	100.0
Acute	638	59.8
Chronic	429	40.2
Female	447	100.0
Acute	210	47.0
Chronic	237	53.0
Syphilis		
Male	960	100.0
Early	269	28.0
Late	691	72.0
Female	515	100.0
Early	101	19.6
Late	414	80.4

SECTION 2

Gonorrhea and Syphilis	*No. of cases*	*Per cent*
Male	583	100.0
Acute and early	292	50.1
Chronic and late	291	49.9
Female	252	100.0
Acute and early	112	44.4
Chronic and late	140	55.6
Gonorrhea		
Male	321	100.0
Acute	195	60.8
Chronic	126	39.3
Female	133	100.0
Acute	72	54.1
Chronic	61	45.9
Syphilis		
Male	262	100.0
Early	97	37.0
Late	165	63.0
Female	119	100.0
Early	40	33.6
Late	79	66.4

VENEREAL DISEASE CASE RATES IN NEW YORK AND OREGON

A comparison of the venereal disease case rates found for the State of New York (exclusive of New York City) by Pfeiffer with those for Oregon is given in table 8.

It will be noted that the rates for both gonorrhea and syphilis among the males and females are very similar in the two states. These two surveys are more or less comparable in that they were made within one month of each other, thus eliminating any possible seasonal variation in the prevalence of the diseases; the same methods of gathering the data were used in the two studies and the colored population in both New York state, exclusive of New York City, and Oregon is less than one per cent.

Eighty-five per cent of the physicians replied to the questionnaire in New York and 88 per cent in Oregon. However, in making the comparison, it should be borne in mind that 11 per cent of the New York venereal disease cases under treatment were in state institutions and hospitals, whereas similar cases are not included in the rates obtained from the Oregon survey.

PORTLAND AS COMPARED WITH OTHER CITIES SURVEYED

Portland, in Multnomah County, near the mouth of the Columbia river, is the only city in Oregon with 250,000 or more population; in fact, this city has 34 per cent of the total population of the state. The cities of Astoria in Clatsop county, Eugene in Lane county and Salem in Marion county are the only others with more than 10,000 population. The case rates for venereal diseases in Portland and in certain cities in Ohio, Illinois, Tennessee and West Virginia are given in table 9.

Table 9 and figure 4 reveal that the veneral disease rate among the white population in Knoxville, Tenn., is similar to that found for Portland. However, Knoxville is a city with only one-third the population of Portland. It will be noted that the rates established for each of the other cities is much higher than the rate of 8.43 cases per 1,000 population found in Portland. In fact, the case rates for the white population of Memphis and Chattanooga, Tenn., are more than twice as high. The low Portland rate is in agreement with the rates found for the state of Oregon by Love and Davenport in their study of the statistical records of "Defects in Drafted Men," collected during the World War.

OPINION OF PHYSICIANS

The physicians of Oregon were requested to state, in answer to the questionnaire, whether in their experience there has been an increase or a decrease of the venereal diseases in late years. Of the 807 physicians 305 expressed an opinion; of these 62 stated that the diseases are on the increase; 159 believed them to be on the decrease, and 84 stated that the prevalence of the disease is unchanged.

TABLE 8.

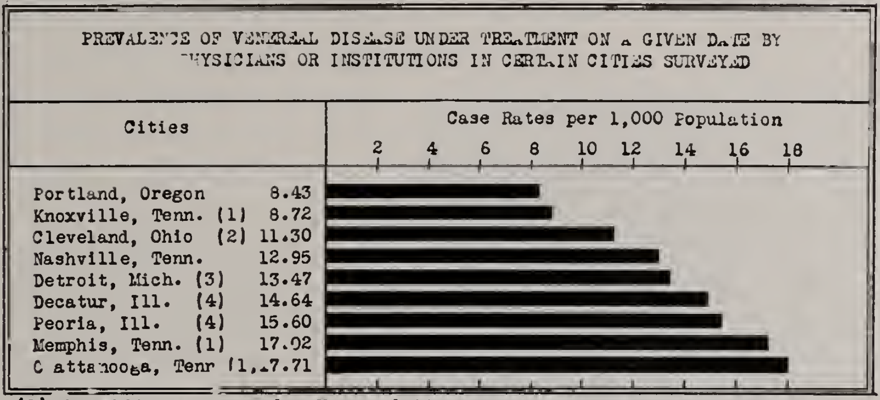
	N. Y. State (ex. N. Y. City)*			Oregon		
	Both sexes	Male	Female	Both sexes	Male	Female
Syphilis and gonorrhea	4.57	6.34	2.82	4.67	5.95	3.21
Syphilis	2.63	3.34	1.93	2.36	3.06	1.46
Gonorrhea	1.94	3.00	.88	2.31	2.89	1.75

* Reference, Venereal Disease Information, Vol. IX, No. 4, p. 149.

TABLE 9. Comparison of prevalence of gonorrhea and syphilis among the white population as indicated by the cases under treatment or observation by physicians or in institutions on a given date.

	CASE RATE PER 1,000 POPULATION			NUMBER OF CASES*			
CITIES	Gonorrhea and Syphilis	Gonorrhea	Syphilis	Gonorrhea and Syphilis	Gonorrhea	Syphilis	Estimated Population
Portland, Ore.	8.4	4.2	4.1	2495	1163	1332	296,000
Cleveland, Ohio†	11.3	5.3	6.0	13,010	6075	6935	1,150,824
Detroit, Mich.‡	13.5	6.5	6.9	16,735	8070	8665	1,242,044
Peoria, Ill.*	15.6	8.0	7.6	1303	671	632	83,500
Decatur, Ill.*	14.6	6.3	8.3	820	355	465	56,000
Memphis, Tenn.**	17.0	9.5	7.5	2018	1125	893	118,533
Nashville, Tenn.**	12.9	5.9	7.1	1254	571	683	96,867
Chattanooga, Tenn.**	17.1	8.1	9.6	877	400	477	49,517
Knoxville, Tenn.**	8.7	4.2	4.5	786	380	406	90,096
Nine smaller cities in U. S.*	14.4	6.0	8.4	6024	2497	3527	418,908

*Data from Venereal Disease Information, Feb. 20, 1928.
†The Bulletin of the Academy of Medicine of Cleveland, Aug., 1928.
‡Data from Venereal Disease Information Vol. VIII, No. 6.
**Data from Venereal Disease Information, Vol. IX, No. 10.



(1) For white persons only; Venereal Disease Information, Vol. IX, No. 10.
(2) The Bulletin of the Academy of Medicine of Cleveland, August, 1928.
(3) A Survey of Venereal Disease Prevalence in Detroit, V.D.I., Vol. VIII, No. 6.
(4) Venereal Disease Prevalence in 14 Communities, V.D.I., Vol. IX, No. 2.

Fig. 4.

SUMMARY

The Public Health Service is conducting a series of studies on the prevalence of venereal diseases in the United States for the purpose of obtaining more accurate information concerning the extent of infection from these diseases than has been available heretofore. Oregon was the first state to be surveyed in its entirety and is the only one in the series representative of the Northwest.

The one-day census method was used in the survey. All physicians were requested to indicate in reply to a questionnaire the number of persons under active treatment or observation for venereal disease as of June 15, 1927. Of the 4,157 cases of venereal disease reported, 92 per cent were under the treatment of the physicians, 7 per cent in the dispensary and the remaining 1 per cent under the treatment of osteopaths or chiropractors.

Among the private cases 90 per cent were under the treatment of 24 per cent of the physicians. The census of venereal disease cases is incomplete insofar as cases under treatment in state institutions, hospitals and clinics other than venereal disease ones is concerned. From studies in New York, Mississippi and Tennessee it has been found that venereal disease cases in these treatment centers range from 1 to 11 per cent of the total venereal disease cases reported.

Oregon may be divided into two rather sharply defined areas, based on density of population: the northwestern section which is fairly well populated, and the rest of the state which is very sparsely settled. The total venereal disease case rate for Section 1 is 5.39 per 1,000 population while that for Section 2 is 3.06.

The rates per 1,000 for males in the present study adjusted by the age factor for average World War draftees from Oregon are: for gonorrhea 10.64, as compared with the rate of 10.30 among draftees; and for syphilis 6.56, as compared with the rate of 2.17 for draftees.

Oregon's total case rate for venereal disease is 4.67 per 1,000 population, as compared with the case rate of 4.57 per 1,000 in New York State (exclusive of New York City), 6.67 for the white population of Mississippi and 7.93 for the white population of Tennessee.

SUPPURATIVE COWPERITIS

A REPORT OF TWO CASES*

Charles D. Donahue, M.D.
EUGENE, ORE.

It is the obscure thing in medicine that often times proves to be the most interesting. It is the unusual case that impresses and causes one to reflect and wonder how many similar cases he has overlooked.

In presenting these two cases it will first be necessary to briefly review the anatomy involved. It is necessary because of the apparent obscurity of these two glands and for the unusual symptoms presented in one of these two cases.

Cunningham's description of the bulbourethral glands is as follows: "They are accessory organs, connected with the genitourinary system, each about the size of a pea, of yellowish brown color, situated in the space between the two fascia of the urogenital diaphragm. They lie below the level of the prostate and above that of the bulbourethra. Each gland is made up of a number of closely applied lobules and is of the compound racemose type. The ductules unite to form a single ductus excretorius which pierces the bulbus urethrae and after a relatively long course ends by opening into the cavernous portion of the urethra by a minute aperture.

"The secreting acini are lined with columnar epithelium.

"They atrophy in old age.

"The urogenital diaphragm is made up of the transversus perinei profundus and the urethral membranaceae which lie between the fascia superior and the fascia inferior."

It is sufficient here to say that the nerve supply for the sphincter vesicae and the sphincter ani both come from the third and fourth sacral.

It is not unlikely that we are dealing with a cowperitis more often than we suspect. Naturally this condition will not manifest itself unless the duct becomes closed by edema, when the gland begins to engorge as a result of its excretory and purulent contents.

If this condition exists, there must be one of two courses pursued. First, the swelling in the duct must subside so that the gland may empty itself or, on the other hand, the gland must rupture. If the latter happens, the condition is accompanied by a great deal of pain.

How many cases are there, then, that exist in a posterior urethritis that do not progress to the extent of pain. Young says that most cases of cowperitis are due to the gonococcus. Possibly some of the chronic gonorrheas, especially those long drawn out cases with no evident severe complications, are due to a cowperitis.

We have seen cases of gonorrhea that reach the chemically pure stage and then flare up with a purulent discharge which contained gram-negative diplococci. A study of these cases may reveal a normal prostate and seminal vesicles and yet the posterior urethra is subacutely inflamed. This undoubtedly is due to latent infection in the excretory glands adjacent to the urethra.

Cohen and Dowimashkin are quoted as saying that little attention has been paid to chronic cowperitis as an underlying cause of recurrent attacks of gonorrhea.

It is not easy to palpate Cowper's glands. However, they can be massaged by placing the patient in the knee-chest position. The forefinger is introduced into the rectum with the thumb of the same hand pressed against the perineum. Gentle pressure is brought to bear on the region of the membranous urethra by approximating thumb and forefinger. Many times one or the other of the glands can be palpated. They are noted to be not unlike any inflamed lymphatic gland.

Nelson's Loose Leaf Medicine reports forty-four pathologic specimens examined, the study being devoted to Cowper's gland. Latent inflamation was found in nine cases or 20.45 per cent. Inflammatory conditions were present in sixteen cases or 36.36 per cent.

Muelfordt states that cowperitis is not a very rare disease. But typical suppurative cowperitis is rare.

In this paper the two cases to be reported are of chronic suppurative type. Both cases, it will be noted, had had gonorrhea, one case of cowperitis apparently being kept alive by a suppurating littritis, while the other was being fed by a suppurating kidney.

We naturally assume that many infections of the genitourinary tract travel from above down. In one instance, the reverse was true. May we not attribute this to the lymphatics?

Diagnosis in each instance was made with the urethroscope, palpation of the gland and eventual perineal drainage. In case 1 the purulent contents was seen emptying from the gland. In case 2 a small mucous polyp could be seen hanging from the orifice of the duct. Both cases were unilateral, involving the left gland.

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* Read before Lane County Medical Society, Eugene, Ore., Jan. 17, 1929.

Case 1. I. T. N., age 60. Admitted to the hospital January 23, 1928. T. 99°, p. 88, r. 28.

Present complaint. There was intense spasmodic pain in the perineum and around the rectum. Tenesmus usually preceded or accompanied this pain. The present trouble started about two weeks previous to his admittance to the hospital.

Past history. He had gonorrhea at the age of 18. There were no evident complications. As far as can be recalled the discharge ceased at about the sixth week.

He has one normal grown daughter.

One year ago there was an attack that was very similar to the present one. It was less severe, however, and lasted about ten days. During this attack there was a purulent discharge from the urethra which was negative for the gonococcus. In November, 1927, a mass appeared on each side of the frenum. These masses were incised and evacuated of about one-half drachm of pus. Two small fistulous tracts resulted.

Physical examination. A man of slender build and slightly stooped. Facies evidenced intense pain. Teeth were radiographed and found normal. Sinuses were normal. Chest, heart, and abdomen were normal. There was such an intense spasm of the sphincter ani that it was necessary to give nitrous oxide in order that rectal examination might be made.

Both the prostate and seminal vesicles were found to be normal. On January 26, 1928, a cystoscopy was performed. It was noted that the posterior urethra was highly inflamed and there was a bullous edema of the vesicle neck. The latter was more evident in the trigone. Other than a silght halo of redness around the right ureteral orifice, the remaining mucosa of the bladder appeared normal.

Pyelogram of the right kidney revealed a normal kidney pelvis. The culture was negative.

The following week the tenesmus and pain around the rectum continued. On February 4 under sacral block urethroscopy was performed.

The posterior urethra was highly inflamed and covered in part with an inflammatory membrane. Plaques of this pushed off with a catheter would leave a bleeding surface. The most marked inflammatory area apppeared in the bulbous urethra. During this part of the examination pus was seen oozing from the duct of the left bulbourethral gland. A small No. 4 ureteral catheter was started through the orifice of the duct. Approximately one c.c. of 1 per cent mercurochrome was injected through the catheter. During the following four days the pain around the perineum seemed more intense.

February 8 a rectal examination under sacral block was done. Palpation revealed a mass in the region of the bulbous urethra and a second longitudinal mass along the left rectal wall. An incision three-fourths of an inch long was made to the left of the rectum. Through this incision the palpating finger came in contact with a mass in the region of the left levator ani. This was broken into and a small amount of pus was obtained for culture and microscopic study. The following ten days the pain had decreased so that it seemed safe to warrant his dismissal from the hospital on February 18. The following ten days the pain was less severe than the original pain.

February 28 20,000 units of diphtheria antitoxin was given subcutaneously. There was practically no reaction. There was a prompt relief of the pain and a disappearance of the tenesmus.

There remained a persistent purulent anterior urethritis which seemed to be influenced by the two small fistulae at the side of the frenum. These were fulgurated with a fine copper wire at three different settings. The right fistulous tract healed but the left continued to drain. It was resected July 18. There remains a urinary fistula at this site.

Since that time there has been a complete disappearance of the pain and urethral discharge. Feels perfectly well and there was an increase in weight of thirty-five pounds.

Laboratory report, February 18: W.b.c. 5,200, s.l. 25 per cent, l.l. 10 per cent, polys. 64 per cent. W.b.c. never ran above 10,500, t. rarely above 100.

After twenty-four hours urine culture showed gram-negative motile bacillus of colon type. Repeated smears from urethra were negative for gonococcus but contained many gram-negative slightly clubbed and diphtheritic type bacilli.

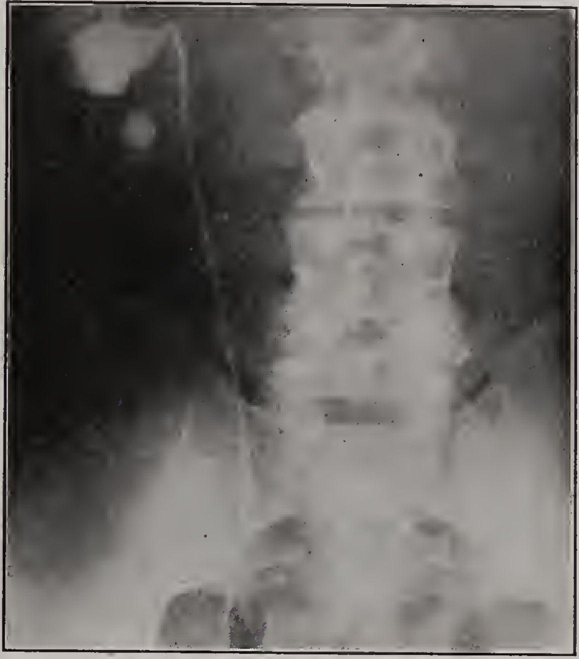

Fig. 1, Case 2. Multiple calculi, left kidney. The patient had never experienced renal or ureteral spasm.

Case 2. W. W. B., age 44.

Present complaint. Complained of a urethritis and a tenesmus. The stream was small and hard to start. There was a perineal fistula on the left.

Past history. He had gonorrhea twenty-three years ago with no apparent complications. Five years later he had a severe urethritis but denies a reinfection. Sounds were used at this time. Considerable difficulty was experienced at times in passing a sound. In 1919 he had a recurrence of the same trouble and lost much weight but effected a recovery and regained his normal weight.

Since 1924 he has noticed the urine being turbid at intervals usually for two or three days, then it returns to a normal appearance. In 1925 he had an operation on the perineum for an abscess. At no time has he ever had renal colic or a ureteral spasm.

Physical examination. A very large emaciated man who not only showed the effects of loss of weight but appeared rather toxic. He was very nervous and irritable. Teeth had all been extracted.

A palpable mass in the left kidney region. Rectal examination revealed a normal prostate and seminal vesicles. A small mass could be felt near the membranous urethra. Under gas anesthesia a No. 24 panendoscope was readily passed into the bladder. The bladder mucosa was normal and both ureteral orifices looked normal. Urine could be seen spouting from the right ureteral orifice but no swirl appeared from the left. The posterior urethra was subacutely inflamed. A small mucous polyp hung from or near the orifice of the left Cowper's duct. There was no obstruction in either ureter and they were readily catheterized with No. 6 catheters. A few drops of thick yellow pus came through the left catheter, while normal urine dropped from the right.

The p.s.p. was: Left side 0, right 40 per cent.

The radiogram showed a large mass on the left with multiple calculi (fig. 1). One of these was the size of a walnut. A nephrectomy on November 27, 1928, substntiated the preoperative diagnosis of a pyonephrosis with multiple renal calculi. The immediate postoperative convalescence was stormy.

At the present time the perineal fistula has healed and the weight has increased from 150 to 188 pounds.

Laboratory report: R.b.c. 3,450,000, w.b.c. 8,150, s.l. 28 per cent, l.l. 65 per cent.

SUMMARY

These two cases of cowperitis were of the suppurative type.

Both had had gonorrhea which possibly was the cause of a secondary latent infection of Cowper's gland. The first was relieved by surgery and diphtheria antitoxin. It will be noted that in this case the antitoxin acted more as a specific rather than as a foreign protein. Finally, after relief of the pain the urethritis would not subside until the sinus at the side of the frenum was resected.

In case 2 the perineal fistula would not close until after the nephrectomy.

Eight Cases of Tuberculoma of Brain Found at Necropsy. In the necropsy service of the New Haven Hospital, in 1,699 consecutive postmortem examinations, 809 of which included the cranial contents, tuberculous meningitis was present thirty-four times. Of these, there were eight in which gross involvement of the brain substance was seen. The cerebrum alone was involved once, the cerebrum and the cerebellum four times, the cerebrum and pons once, the ceerbrum, cerebellum and pons once, and the pons alone once. Four of the patients were infants, aged 6 months, 12 months, 13 months and 16 months, while the other four were adults, 17, 25, 34 and 36 years of age. Three were males, and five females. The opinions of the earlier authors that tuberculomas were most frequently seen in children are not substantiated by the more recent studies, which report a majority of the cases in adults. The data presented by Henry W. Ferris, New Haven, Conn. (*Journal A. M. A.*, May 18, 1929) do not throw much light on this subject, since the incidence was equally divided between adults and infants. In the eight cases of tuberculoma of the brain reported here, multiple involvement was seen in most of the cases. It is of interest to note that single tuberculomas occurred less frequently in this series than in other series reported in the literature. The frequent occurrence of tuberculous meningitis in this series is in marked contrast to the smaller incidence reported by some other authors.

RUPTURE OF ESOPHAGEAL DIVERTICULUM CAUSING DEATH

Ivan M. Woolley, M. D.
PORTLAND, OREGON

The subject of diverticula of the esophagus has been well covered in the literature and one finds many references regarding symptoms, diagnosis and treatment. Jewett and Lichty published interesting reports in the *Annals of Clinical Medicine*, December, 1925, emphasizing some of the important symptoms. Lester Smith gives an excellent summary of the cases to date in the January, 1928, issue of the *Journal of Roentenological and Radium Therapy*.

I can do no better than to refer you to these and other writers who have covered the matter thoroughly. In my search of the literature, I did not find any cases of death resulting from rupture of esophageal diverticula. It is because of this fact that the following case is being reported.

REPORT OF CASE

Mrs. W., age 32 years, was admitted to Emanuel Hospital, February 6, 1928, because of protracted vomiting. She was the mother of two normal children and now about five months pregnant.

During her first pregnancy (1918) she had influenza and later an appendectomy was performed. Following the operation there was severe postoperative vomiting. One year later (1919) the left ovary and the right tube were removed. From that time until two days before entering the hospital she had enjoyed rugged health.

The present pregnancy had progressed to the fifth month with no discomfort to the patient. She had been under careful observation from the sixth week.

On the evening of February 3 the patient became nauseated; at about 1:00 a. m. the next day started to vomit. This was followed in an hour by severe cramping in the epigastrium and I was called to her home to see her.

Her temperature was 98.3° and pulse 80. The abdomen was flaccid with no tumor masses nor areas of tenderness. The bowels had moved that day. The vomitus consisted of food material and the patient attributed the upset to some fried food eaten the night before. She explained that she rarely ever ate fried foods at night as they usually distressed her.

The uterus was irritable and contracting at frequent intervals. To allay this, she was given one-third grain of pantapon with 1/100 grain of atropine. She rested comfortably the rest of the night and awakened free from distress about 7:00 a. m. but upon arising felt nauseated. Because of the nausea, she took an enema and reported satisfactory results. About 10:00 a. m. the cramps returned and were soon followed by vomiting. She was again seen about 1:00 p. m. with the following findings: Temperature 98.6°, pulse 90 and of good quality, and blood pressure 110/60. The abdomen was still flaccid and there were no areas of tenderness and no masses. The vomitus was of the usual material. The uterus was now contracting with some force, so the pantapon and atropine were repeated, and the patient was given bismuth by mouth. The urine was normal.

At 8:00 a. m. the following day the patient was again seen. The cramps and nausea had returned about 5:00 a. m. and were more severe. She was voiding urine and passing gas with each paroxysm of vomiting. The vomitus was mostly mucus. Temperature 99° (rectal), pulse 96, blood pressure 110/60. The abdominal condition was as before. This time she was given atropine by hypodermic, and a mixture of belladonna and bismuth by mouth. Counterirritation was applied over the abdomen. She received relief from this treatment and slept for some time. In the evening the vomiting and cramps returned, and the patient was removed to the hospital.

Upon admission her temperature was 99°, pulse 90, urine normal, blood pressure 110/60. The leucocyte count was 5,850 with 81 per cent polynuclear cells. She was vomiting bile-stained mucus. The nurse reported that she passed gas by rectum during the vomiting spells. The uterus was contracting firmly but there was no vaginal discharge. At 3:00 a. m., Feb. 6, the abdominal pain became very severe, and the patient vomited a quantity of fecal material. She was immediately taken to the surgery.

At operation it was found that about five inches of the illeum was adherent to the anterior surface of the uterus which had carried it upwards against the anterior abdominal wall. The compression and torsion so developed was the cause of intermittent or partial obstruction which finally produced a complete blocking of the bowel. The adhesions were broken up and the obstruction relieved. The intestinal contents above the involved area were drained through a test tube and the wound thus made was repaired by a purse string suture. The bowel muscle showed a satisfactory response after being freed. The patient left the table in fair condition. During the next twelve hours the vomiting was persistent. Gastric lavage was performed and improved her condition.

At 3:00 a. m., Feb. 7, the nurse noticed the head of the fetus presenting at the vulva, although there had been no noticeable uterine contractions. In her weakened condition, the patient was unable to deliver without assistance so low forceps were applied, and an easy extraction performed.

The following day she began passing quantities of liquid material by bowel. She was alert mentally and described her discomforts accurately. On Feb. 9 vomiting began again and she grew decidedly worse. The vomitus at this time was not fecal in odor and had a reddish brown tinge. She did not complain of pain except about the wound when vomiting. Her condition became rapidly worse and she died at 6:30 a. m. Feb. 10.

At autopsy the abdominal examination showed that the obstruction had been completely relieved. There was a moderate diffuse serofibrinous peritonitis. The intestine was hyperemic but not gangrenous in any area. There had been no seepage from the drain wound in the bowel.

Upon opening the thoracic cavity the exploring hand brought out fluid from behind the left lung. Examination showed that both pleural cavities contained about a liter of fluid, similar in character to the reddish brown fluid that the patient had been vomiting just before her death.

Careful examination revealed an old diverticulum on the anterior surface of the esophagus at the junction of the middle and lower third which had ruptured at the fundus. Through this opening the gastric contents had been ejected into the mediastinum, where digestion of the tissues had taken place, then rupturing through both pleural linings into the pleural sacs. The only tissues remaining intact were the nerve fibers crossing through this area. The posterior surfaces of the lungs showed evidence of marked hemorrhage on the pleural surfaces. The heart and other structures were normal. It was estimated by the pathologist that the rupture had taken place about thirty-six hours before death.

Despite the fact that the patient was unusually bright and alert until shortly before she died, she did not at any time show signs of distress from the chest. This is possibly explained by the lack of pressure because of free drainage by way of the esophagus, and the lack of sensory nerves in the mediastinal tissue.

I feel very certain that the rupture was spontaneous rather than from any possible injury caused by the stomach tube because of the following reasons:

The mouth of the diverticulum was not large enough to admit the tube.

No pain or distress was shown by the patient during or after the lavage.

The pathologist estimated that the rupture occurred about thirty-six hours before death. The tube was passed about ninety-six hours before death.

707 Medical Dental Bldg.

Roentgen Irradiation in Treatment of Hyperthyroidism. A statistical evaluation of roentgen irradiation in the treatment of hyperthyroidism based on 305 cases is made by T. A. Groover, A. C. Christie, E. A. Merritt, F. O. Coe and E. M. McPeak, Washington, D. C. (*Journal A. M. A.*, May 25, 1929). In this series there were twenty-six cases in which a thyroidectomy had previously been performed, without improvement, with incomplete relief, or with recurrence of toxicity. The results of treatment were: Cured of hyperthyroidism, 271, 88.85 per cent; improved, twenty-six, 8.52 per cent; unimproved, eight, 2.63 per cent. One of the most reliable criteria for judging progress in cases of hyperthyroidism is the weight curve. The greatest gain in any single case of their series was 80 pounds (36 Kg.). One of the criticisms that have been made with respect to the irradiation of hyperthyroidism has been the length of time required to gain improvement or to effect a cure. On an average, 6.6 treatments per patient were administered in this series of cases, and generally 2.7 treatments were given before improvement was first noted. As cases are treated at intervals of three weeks, it is apparent that the average duration of treatment was less than five months and the average lapse of time before improvement began was approximately two months. The authors have not been able to determine from their records the average loss of time from work by the patients of this series, but they have every reason to believe that the economic loss from this source has not been greater than with any other adequate method of treatment, and, on the whole, has probably been less. In this series symptoms of hyperthyroidism on an average antedated the beginning of roentgen treatment more than two years. While the facts and figures given do not justify any final conclusion as to the permanence of cure following roentgen therapy, they at least indicate that results in this regard are quite as satisfactory as with any other method. Among the factors which have contributed to failures to cure hyperthyroidism by radiation therapy, are the following: (1) overwhelming toxicity; (2) serious cardiovascular or other visceral changes, and (3) noncooperation on the part of the patient or the attending physician. As twenty-six patients had had previous thyroidectomies without cure, the results of roentgen therapy in this group are slightly more favorable than they are for the entire series, but the difference is not sufficient to be regarded as significant.

PORTLAND A MEDICAL CENTER

During recent years Portland has made rapid strides toward becoming the medical center of the Pacific Northwest. Because of its strategic location the City of Roses has long been the center of activity for lumbering, wheat and other basic industries of the Northwestern states. This tendency is making itself felt in other fields and particularly in that of medical education and federal medical service.

Marquam Hill, a beautiful wooded area of one hundred eight acres in the west hills, is the seat of Portland's medical center. It is a site of exceptional scenic grandeur, offering an inspiring view of the city, the Willamette river and the snow-capped mountain peaks to the north and east. Located within a mile of the business section of the city and yet isolated from the inevitable noise and smoke of all urban centers, Marquam Hill is an ideal medical school and hospital environment.

The Medical School of the University of Oregon is the first of the Marquam Hill group. Two units of the school, buildings of three and four stories respectively, have been erected. They house the preclinic departments, the offices and research laboratories of the clinical departments, and the library, which contains over seven thousand volumes and receives over two hundred and twenty-five current medical journals. A circulating library service is provided for the practising physicians of the Pacific Northwest and a large number of books and periodicals are loaned by mail.

The medical school has the class "A" rating of the Council on Medical Education and Hospitals and offers a four year course to students who have had three years of premedical education at an approved college. Approved colleges in Oregon offering premedical courses include the University of Oregon, Oregon State College, Southern Oregon Normal School, Reed College, Pacific University, Willamette University, Linfield College, and Mount Angel College. The medical school provides the only undergraduate medical training available in the Pacific Northwest, with the result that students register there from Washington, Montana, Idaho, California, Utah and Alaska, as well as the Hawaiian and Philippine Islands.

Second of the Marquam Hill group is the Multnomah County Hospital. This hospital, which is of the same architectural design as the medical school buildings, is a general charity hospital, accommodating three hundred beds and embodying the most modern conception of a teaching hospital. The director is a university official and the majority of the staff are appointed from nominations made by the medical school. This arrangement provides a most successful affiliation for teaching, research and care of the sick.

Doernbecher Memorial Hospital for Children is the third Marquam Hill institution. This structure also harmonizes in architectural design with the other buildings of the group. The hospital, which has a capacity of eighty beds, is owned and operated by the university. It provides exceptional facilities for the care of sick and disabled children committed to the medical school by the counties of the state, under the Children's Hospital Service Law, and affords every opportunity for teaching and research in pediatrics and other clinical departments.

The most recent addition to Portland's medical center on Marquam Hill is the new Veterans' Hospital. This institution, comprising thirteen buildings of the most recent design and with the latest equipment, provides facilities for three hundred and ten patients, and includes a tuberculosis and neuropathic ward. The hospital has not yet been made an official diagnostic center by the Veterans' Bureau, but it will in effect serve as such for the entire Pacific Northwest area.

Portland's other facilities for the care of the sick are also exceptional for a city of its size. Charity patients are cared for at the Portland Free Dispensary. This institution is operated jointly by the People's Institute, a private philanthropic organization, and the medical school. The professional and nursing staff is appointed by the medical school, so that the dispensary provides a valuable clinical teaching station. Daily clinics are held in tuberculosis, venereal diseases, surgery, obstetrics, pediatrics and the other clinical branches.

The city has thirty hospitals and homes, six of which have been approved for interneship by the Council on Medical Education and Hospitals. Eight of the hospitals have been approved by the American College of Surgeons. The number of beds per hospital ranges from 8 to 364, and the total capacity is 2,325 beds.

Every institution in Portland's medical center has promised to cooperate to the utmost with the pathologic department of the medical school and the clinical pathologists of the city in providing suitable pathologic material during the coming session. Visiting Fellows of the American Medical

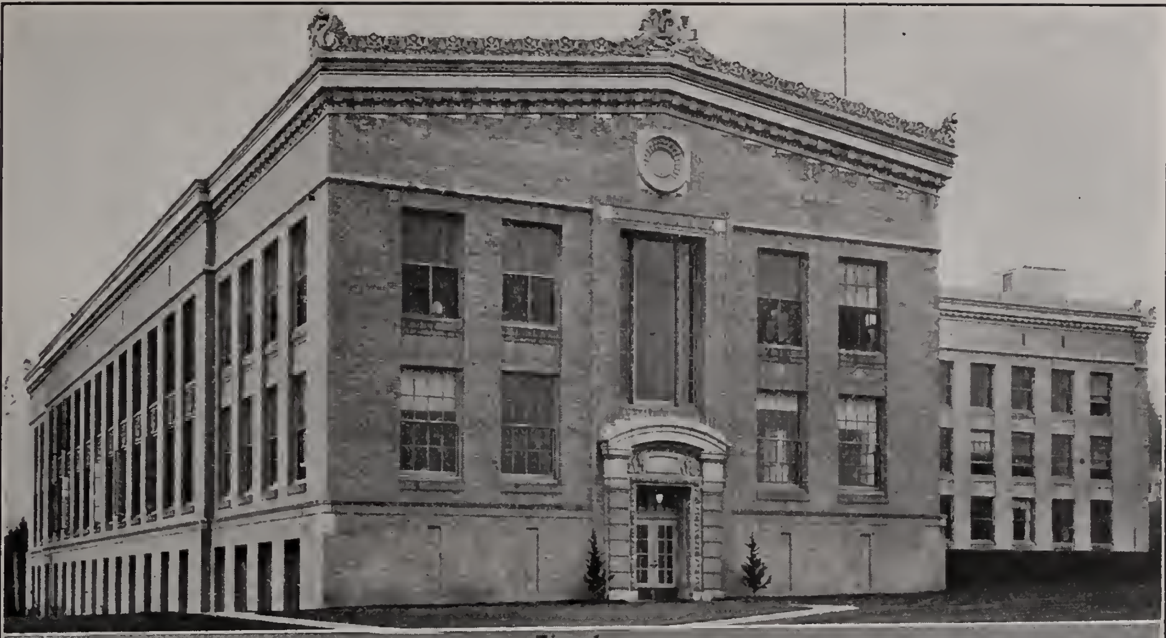

Fig. 1

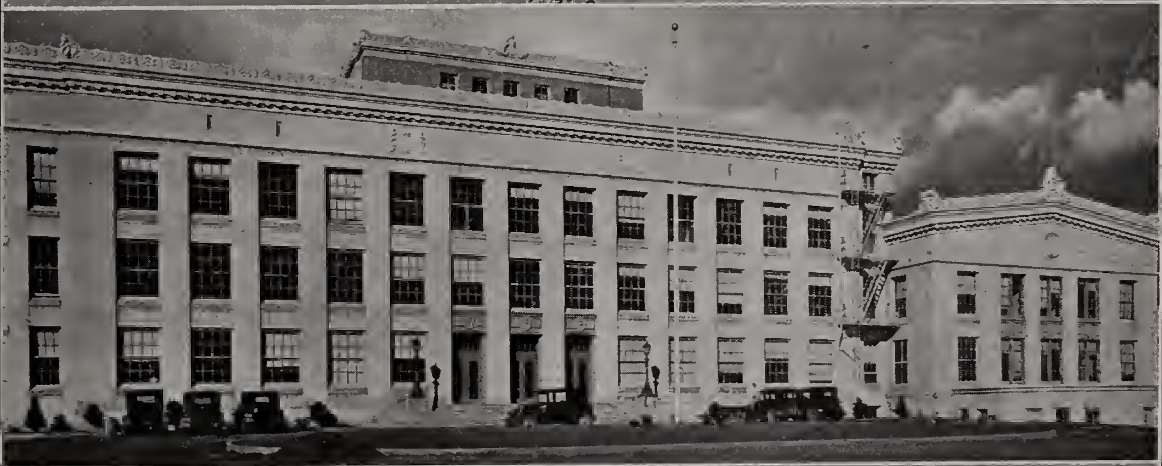

Fig. 2

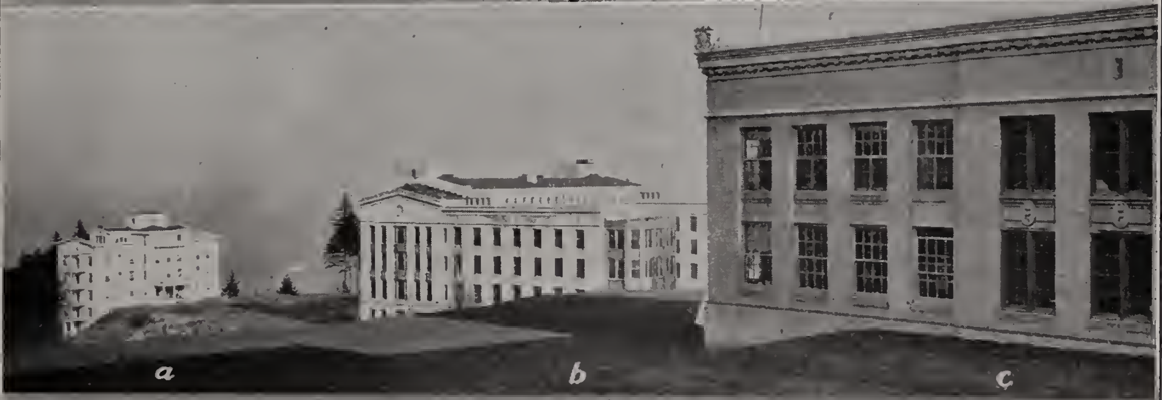

Fig. 3

Figs. 1 and 2. University of Oregon Medical School.
Fig. 3, a, Nurses' Home; b, Multnomah County Hospital; c, Medical School.

Association may thus be assured that the demonstrations on fresh pathology will be fully up to the high standard set at recent meetings of the Association.

THE UNIVERSITY OF OREGON MEDICAL SCHOOL AND AFFILIATED INSTITUTIONS

The University of Oregon Medical School was established by charter from the Board of Regents

Doernbecher Memorial Hospital for Children and University of Oregon Medical School

of the University in 1887, and has operated continuously since that time. In response to the general appreciation by the medical profession of the need of more systematic medical education, and in accord with the program of the American Medical Association in establishing the standards thereof, the medical school in 1909 received its first appropriation from the legislature of the state in addition to the tuition fee of students. The appropriation of $30,000 for a two-year period enabled the establishment of the preclinic years upon a more nearly academic basis and began the more intimate integration of the medical school into the University, located at Eugene, one hundred twenty-five miles from Portland.

Ever increasing interest on the part of the people and the profession of the state has resulted in biennial increase in the appropriations for building and maintenance and, encouraged by private and foundation gifts, an imposing center of medical education and research has been developed in Portland.

Of great importance was the merger in 1913 of the Willamette University Medical School with the University of Oregon Medical School, combining in the single institution the entire medical school program for the state and organizing the only modern medical school in the great area north of San Francisco and west of Denver. Its progress has been in accord with the obligation assumed.

A campus of one hundred eight acres, at an elevation of five hundred feet above the city within five minutes of the business center, was acquired by gift of twenty acres in 1914 by the Union Pacific Railroad Company and eighty-eight acres in 1924 through the gift of Mrs. C. S. Jackson and Mr. Phillip Jackson, dedicating the tract as a park named in memory of the late Sam Jackson. The campus is one of exceptional scenic grandeur and adaptive to educational and hospital location, being remote from noise, smoke, and dust, but readily accessible.

The medical school building housing the preclinic departments surmounts the heights. It was built at a cost of $415,000, of which $225,000 was appropriated by the legislature, $163,000 by the General Education Board, and $27,000 was donated by the citizens of Portland. It houses the administrative offices, the departments of anatomy, physiology, chemistry, pathology, bacteriology and pharmacology, the library and the art department. These departments possess unusual equipment and facilities and the library contains 11,000 volumes with subscription to more than 260 periodicals.

Multnomah Hospital of 275 beds, the county charity hospital, built at a cost of $1,000,000, is situated adjacent to the medical school, upon a tract deeded to the county by the University. Contractural agreement between the medical school and the county commissioners enables the affiliation which establishes this hospital as the chief clinical teaching unit of the medical school. The hospital training school building is located nearby.

The Doernbecher Memorial Hospital for Children, owned and operated by the medical school, is also located adjacent to the medical school. Built and equippped at a cost of $320,000, it was opened in 1925, providing eighty beds for children and modern facilities for the department of pediatrics. It is maintained by state appropriation amounting to $169,240.71 for the biennium.

Augmenting the medical center is the Veterans' Bureau Hospital, built in the campus at a cost of $1,300,000, with 300 beds, upon a site of twenty-five acres, given by the medical school to the United States Government in 1926.

The Portland Free Dispensary is really the outpatient clinic of the medical school, and university hospitals. At present situated one mile from the medical school, it is soon to be rebuilt upon the campus at a cost of $400,000, recently appropriated for the purpose by the General Education Board.

The professional and nursing staff are appointed by the medical school and clinics are maintained in all departments of teaching in cooperation with numerous civic organizations and the State Board of Health, the City of Portland and County of Multnomah. Attendance in 1928 comprised 13,400 individual patients.

Although these are the chief clinical teaching units of the medical school, extramural clinics are conducted in the Good Samaritan Hospital, St. Vincent's Hospital, Portland Surgical Hospital, Emanuel Hospital, Portland Sanitarium, Portland Medican Hospital, Waverly Baby Home, Albertina Kerr Nursery and the Oregon State Hospital for Insane.

Contractual agreement with commissioners of Multnomah County establishes the Department of Pathology in the medical school as official autopsy authority of the coroner, affording more than 400 teaching autopsies annually and a remarkable wealth of museum material, as well as excellent facility for teaching jurisprudence and medicolegal work.

Plans are now afoot for the construction of other contractually affiliated institutions within the campus, including a maternity cottage, a convalescent children's and baby home, a psychiatric hospital, a tuberculosis hospital, the city hospital for contagious diseases and a university school of nursing.

The annual budget of the medical school is approximately $160,000, for the Multnomah County Hospital, $178,000; for the Children's Hospital, $98,000; for the outpatient clinic, $40,000; totaling for the center about $476,000.

Classes in medicine are limited by the Board of Regents to 60, and the present enrollment is 236.

PORTLAND MEDICAL INSTITUTIONS

Doernbecher Memorial Hospital for Children, Marquam Hill, 63-bed children's hospital. Established 1926; under state control; Grace Phelps, R. N., superintendent.

Emanuel Hospital, 600 Commercial Street, 210-bed general hospital. Established 1913; approved by the American College of Surgeons; approved for interneship by the Council of Medical Education and Hospitals of the American Medical Association; conducts nurse training school accredited by State Board for Examination and Registration of Nurses. Under control of Emanuel Charity Board, Rev. Axel M. Green, Superintendent.

Good Samaritan Hospital, 23rd and Marshall Streets. 319-bed general hospital. Established 1874; approved by the American College of Surgeons; approved for interneship by the Council on Medical Education and Hospitals of the American Medical Association; conducts nurse training school accredited by State Board for Examination and Registration of Nurses. Under control of the Protestant Episcopal Church of the Diocese of Oregon, Emily L. Loveridge, R. N., Superintendent.

Multnomah County Hosptial, Marquam Hill, 200-bed general hospital. Conducts outpatient department; established 1909; approved by the American College of Surgeons; approved for interneship by the Council on Medical Education and Hospitals of the American Medical Association; conducts nurse training school accredited by State Board for Examination and Registration of Nurses. Under county control. Dr. Harry C. Cliff, medical director; Emma E. Jones, R. N., Superintendent.

Portland Sanitarium, 160 East 60th Street, 102-bed general hospital. Established 1901; approved by the American College of Surgeons; approved for interneship by the Council on Medical Education and Hospitals of the American Medical Association; conducts nurse training school accredited by State Board for Examination and Registration of Nurses. Under control of Seventh Day Adventist Church. R. W. Nelson, Superintendent.

Portland Surgical Hospital, 611 Lovejoy Street, 84-bed general hospital. Established 1915; approved by the American College of Surgeons; under independent control. Dr. Robert C. Coffey, chief of staff; Mrs. Tom Richardson, Superintendent.

St. Vincent's Hospital, Hoyt and Cornell Drive, 364-bed general hospital. Conducts contagious disease sanitarium; established 1875; approved by the American College of Surgeons; approved for interneship by the Council on Medical Education and Hospitals of the American Medical Association; conducts nurse training school accredited by State Board for Examination and Registration of Nurses. Under control of Sisters of Charity of Providence; Sister Petronilla, Superintendent.

Shriners' Hospital for Crippled Children, 82nd Street and Sandy Boulevard, 50-bed orthopedic hospital. Conducts outpatient department; established 1924; approved by the American College of Surgeons; approved for residency in orthopedics by the Council on Medical Education and Hospitals of the American Medical Association. Under control of Ancient Arabic Order, Nobles of the Mystic Shrine. Dr. Richard B. Dillehunt, Chief Surgeon; Letha Humphrey, R. N., Superintendent.

United States Veterans' Hospital, Marquam Hill, 310-bed general hospital. Established 1928; approved by the American College of Surgeons. Under control of United States Veterans' Bureau. Dr. Paul I. Carter, Medical Officer in Charge.

NORTHWEST MEDICINE
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Devoted to the Interests of the Medical Profession of the Pacific Northwest
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EDITORIAL

THE SEATTLE HOSPITAL SITUATION

In proportion to its population Seattle is said to be one of the most inadequately provided with hospital facilities of any of the large cities of our country. The seven private hospitals, containing about 1240 beds, furnished with modern equipment, offer service equal to that in other cities but fail to meet hospital demands, while the county and city hospitals for treatment of charity patients, with about 375 beds, are lacking in many requirements of up-to-date modern institutions. While the city has grown enormously in population since they were established, these public hospitals have received only negligible additions of space and have been unable to keep abreast of the hospital necessities of the day.

This situation will shortly be relieved by the construction of the new county hospital, provided by the bond issue of the last election, when the people voted $2,750,000 for the erection of this institution. The sum of $225,000 has been utilized for the purchase of two city blocks and two half blocks adjacent to that on the first hill which for years was the site of the old court house. Thus three blocks of land will be available for this new enterprise. Dr. W. H. Walsh, Chicago hospital expert, has been engaged to plan and supervise the construction of the hospital. The money available will suffice to build the first unit with three hundred fifty beds. The administrative, engineering and mechanical features will be constructed so as to provide for the complete hospital, contemplated for the future, when the addition of wings and new buildings will present a maximum of one thousand beds. This first unit, built of reinforced concrete, will be nine stories in height, with a tower of twelve stories, situated on the brow of the first hill, the most conspicuous and outstanding feature of the city skyline. The architect's drawing presents a structure of beauty and impressive dignity which will be unsurpassed by anything on the Pacific Coast.

The details of the institution provide an outpatient department on the ground floor and a garage which will house the cars of all the attending physicians. The first floor will contain the administration department, the hospital laboratories, the x-ray and physical therapy departments. One floor will be devoted to the neuropsychiatric department, which will accommodate fifty-eight patients. It will be utilized for the study and observation of mental cases and treatment of suitable patients previous to commitment to the state institutions. Thus will be abolished the barbarous custom of the present day by which the insane and those suspected of this condition are confined in the county jail while awaiting committal to the state hospitals. Special floors for the obstetric and pediatric departments will provide all the latest equipment and methods for treatment which have been installed in the newest and most modern institutions. Across the street on Ninth Avenue will be built the nurses' home to house two hundred nurses. It will include an auditorium, class rooms, gymnasium and other necessary provisions, with a tunnel connecting with the hospital. Space will be left for the future construction of a neuropsychiatric institute for the accommodation of one hundred fifty patients, with court room, juvenile department and other suitable provisions. It is contemplated that ultimately a complete physical therapy department will be installed in this building on a larger scale than can be provided at the present time.

In order that the hospital plans may be perfected before the work is started, sufficient time is to be devoted to cover all details. It is, therefore, expected that actual work will not begin before the end of the present year. It is estimated that a year's time will be necessary for its completion. Dr. Walsh states that when the whole hospital is constructed as contemplated it will be the outstanding institution on the Coast.

The need for further hospital facilities in the city, and especially a provision for the care of patients of moderate means, has been so thoroughly appreciated by leading business men that plans have been made for the construction of a hospital which will to a certain extent meet these requirements. This will be known as the Memorial Hospital and funds for it will be obtained through public subscription. The Chamber of Commerce has set aside January, February and March of next year, during which a drive will be made to raise $3,500,000, which will be used for the construction of an institution of three hundred beds. While it is contemplated that the management will be along the lines of other private hospitals, it is planned to set aside a certain number of beds for the care of people of moderate means, for which the rates will be less than those ordinarily charged, the remaining expense being met by the income from the endowment which will be included in this drive of next year.

The third institution will be the Marine Hospital which it is expected the U. S. Government will begin late this year. The City Council has already presented to the government a twelve acre tract of land on the north face of Beacon Hill, which will be adequate for the construction of the hospital of 350 beds to cost $3,500,000, which will also include an isolation hospital unit. This is a commanding situation with a magnificent outlook over the Sound and the city to the north. When these institutions shall have been constructed Seattle can be classed with other cities of its size as regards hospital provisions to care for the sick.

REGISTRY OF TECHNICIANS

Establishment of the laboratory as an indispensable aid to the diagnosis of disease has created a new specialty of clinical pathology. In order to carry on the technical tests necessary for scientific diagnostic procedures, the laboratory director has found it necessary to train a technical personnel. The standardization of hospitals and the demand for qualified laboratory assistants have required a proper standardization of the preliminary education and technical training of these needed laboratory assistants. There has also developed on the part of those engaged in this useful work a desire for an improvement of their status similar to the evolution of the trained nurse a generation ago. To accomplish this result, the American Society of Clinical Pathologists has assumed the task of organizing a Registry of Technicians, with rules under which those qualified by adequate technical instruction and moral character will receive certificates.

This subject is of interest to physicians in every field of endeavor who are desirous of securing the services of technicians to carry out routine laboratory procedures. One desirable feature of the Registry is the facility it offers for finding suitable placement for registrants and in aiding physicians to find desirable applicants. The headquarters of the Registry of Technicians of the American Society of Clinical Pathologists are located in the Metropolitan Building, Denver, Colo.

THE OREGON MEETING AT LA GRANDE

With the meeting of the American Medical Association in Portland during July in contemplation, it was feared that the annual meeting of the Oregon State Medical Society at La Grande might prove a disappointment regarding attendance and general interest. This anticipation, however, was not realized. While the number of physicians at the meeting did not equal that of many held in Portland, the attendance was surprisingly large, representing members of the profession from all cities of the state. In addition there were Drs. J. C. Lyman, F. C. Robinson, E. E. Hill, R. Golden, G. R. Gowan, R. W. Smith and C. J. Johannesson from Walla Walla, and G. W. Swift and C. A. Smith from Seattle.

A pleasing and noticeable feature of the program was the reading of papers by a large number of younger members of the profession, many of whom have never before appeared on a program of a state society meeting. The quality of these papers demonstrates earnest work in research and its practical character which these younger men have accomplished. It is evident that the future practice of medicine in Oregon will be in the hands of a competent group of physicians, whose work will be in no way inferior and in some respects superior to that of their predecessors. The visiting speakers for the meeting were Dr. J. H. Falls of Chicago, professor of obstetrics of University of Illinois College of Medicine, who presented a paper on "Hyperthyroidism Complicating Pregnancy." Dr. William J. Mayo delivered an address on "The Cancer Problem."

Climatic conditions at this season were ideal for an enjoyable gathering of this sort. The excessive heat of Eastern Oregon in middle summer was replaced by cool, gentle breezes which were a stimulus to thought and action. Dr. Bouvy of La Grande, president at this meeting, and other physicians and their wives of the city offered a cordial reception to all visitors, so that the meeting will be memorable as a pleasing occasion, enjoyed both from professional and social standpoints.

AMERICAN UROLOGICAL ASSOCIATION

The twenty-sixth annual meeting of American Urological Assosociation will be held in Seattle in July, preceding the meeting of the American Medical Association in Portland. The program of the Seattle meeting will consist of dry and wet clinics, July 1, 2 and 3, the afternoons being devoted to scientific papers. The entertainment will consist of an excursion on the Sound, a smoker and motor trips. Extensive arrangements have been made for the entertainment of the wives and families of visiting members.

Then the meeting will adjourn to Vancouver, B. C., arriving there on the morning of July 4, this day being given over to entertainment. A golf tournament will be held at Shaughnessy Heights, while races will be scheduled at Lansdown for those who do not play golf, the races and horses being named for the visiting urologists. The annual banquet will be held in the Oak Room of the hotel, with presentation of golf trophy cartoons, music and addresses by the Mayor of Vancouver, Governor General and the Minister of Public Health.

On July 5 there will be a meeting of the Western Branch of the American Urological Association. Fourteen excellent papers are on the program, most of them being from the Pacific Coast. There will also be papers by men from New York, Philadelphia and St. Louis. In the evening there will be a dinner dance in the Vancouver Hotel.

Reservations to date indicate there will be a record attendance with representatives from all the large cities in the East, South and Middle West. Two guests of honor have thus far made reservations, Professor Von Lichtenberg of Berlin, who contributed photography to the profession, and Professor F. Derom of the University of Ghent, Belgium.

IDAHO MEETING AT LEWISTON

The Thirty-seventh annual meeting of Idaho State Medical Association will be held at Lewiston July 5-6. Headquarters for the meeting will be at Lewis-Clark Hotel. As indicated in the following program, papers will be presented by a number of distinguished members of the profession from eastern cities which, it is believed, will prove attractive to the physicians of the state and adjacent cities in Washington. A cordial invitation is extended to the profession of Washington and Oregon to be present at this meeting. A train leaves Lewiston over the Union Pacific at 6:45 p.m., arriving in Portland at 7:15 the following morning in time for the first session of the American Medical Association meeting in that city.

PROGRAM

July 5

MORNING SESSION

8-9. "Cancer as a World Problem." Joseph C. Bloodgood, Baltimore, Md.

9-10. "Ophthalmic Appearances in Cardiovascular-Renal Conditions." Walter B. Lancaster, Boston, Mass.

10-11. "The Injection Treatment of Varicose Veins." G. H. Wahle, Boise.

11-12. "Surgical Lesions of the Stomach and Duodenum." R. L. Sanders, Memphis, Tenn.

AFTERNOON SESSION

1-2. "Surgical Diseases of the Spleen." Leo P. Bell, Woodland Clinic, Woodland, Cal.

2-2:30. "Maternal Mortality." Wm. F. Howard, Pocatello.

2:30-3:30. "To be announced." D. C. Balfour, Mayo Clinic, Rochester, Minn.

3:30-4:00. "Discussion on the Use of Foreign Proteins in the Treatment of Ocular Inflammations." J. M. Patton, Omaha, Neb.

4:00. Visit to Saw Mill, etc.

7:30. Annual Banquet. Lewis-Clark Hotel.

July 6

MORNING SESSION

8-9. "X-Ray and Biopsy as the Two Precise Methods of Diagnosis." Joseph C. Bloodgood, Baltimore, Md.

9-10. "Tragedies of Ophthalmic Practice." Walter B. Lancaster, Boston, Mass.

10-11.

11-12. "Cholecystic Disease." R. L. Sanders, Memphis, Tenn.

AFTERNOON SESSION

1-2. "Tularemia." R. R. Parker, Hamilton, Mont.
"Open Discussion." Earl D. Jones, Roberts.

2-3. "The Management of Ocular Emergencies." J. M. Patton, Omaha, Neb.

4-dark. Sightseeing, Golf, etc.

7:30. Banquet for the doctors and their ladies as guests of the Nez Perce County Medical Society.

Program During the Annual Banquet

"Our State Organization." J. G. Crownhart, Madison, Wis.

"The A. M. A. Delegate." Geo. R. Proctor, Nampa.

CHANGE OF WASHINGTON MEETING DATE

Owing to inability to secure hotel accommodations in Yakima at the time which has been set for the annual meeting of the Washington State Medical Association, the date of the meeting has been advanced one week. The time of the annual meeting, therefore, will be in Yakima, August 27-31. Let all members of the Washington association, and others interested in this meeting, make a note of this change of date.

HEALTHY CARRIER IN SCARLET FEVER. Fourteen cases of scarlet fever have been traced by Ruth Tunnicliff and T. T. Crooks, Chicago (*Journal A. M. A.*, May 4, 1929) to three healthy carriers of scarlet fever streptococci. They used the opsonic test for the identification of scarlatinal streptococci which is simple and concise and can be carried out in any public health laboratory almost as quickly and accurately as can the cultural diagnosis of diphtheria. Immunologic methods for the detection of carriers of scarlet fever streptococci may now enable us to check scarlet fever outbreaks just as we do diphtheria epidemics.

MEDICAL NOTES

ENTERTAINMENT FOR VISITORS AT A. M. A. MEETING

Many diversions and entertainment events not listed on the printed program are being planned by the busy hospitality committees, full details of these to be available through special programs supplied to delegates and their families upon arrival at Portland. Included among these features will be:

Trips by motor to all the famous beaches of the beautiful Oregon and Washington coast.

A series of outdoor teas and receptions in the lovely gardens of the most beautiful Portland homes along the banks of the famous Willamette river.

A salmon barbeque, where many hundreds of the far famed Royal Chinook salmon, found only in Columbia River waters, and termed the king of all fish, will be baked in outdoor ovens and served piping hot at a picnic in the evergreen groves of an Oregon forest.

A golf tournament at the famous Waverly Golf Club course.

All golf clubs and courses, numbering seventeen, in and near Portland, and including some of the most beautiful courses on the continent, to be open to the visitors.

An elaborate presidential reception to be staged in the immense ballroom of the new Masonic temple.

A horse show at the beautiful suburban home of Aaron Frank, leading Portland merchant, who owns a string of world famous show animals, including champion harness horses and fancy gaited mounts imported from England that have taken blue ribbons on all the horse show circuits of the Pacific Coast and Middle Western country.

A series of breakfasts, luncheons and dinners for special groups, women's gatherings and alumni events, with various medical societies and organizations as hosts.

Lectures every evening at a large auditorium for laymen audiences, who will be addressed on preventive medicine and other health topics by experts of national renown.

All civic luncheon clubs open to the visitors throughout the convention period, and a special program honoring the A. M. A. at the weekly forum of the Portland Chamber of Commerce on the opening day.

Through the cooperation of the United States Government the United States Hospital Ship Relief, largest hospital ship in the world and the only one ever built especially for the purpose, will be anchored in the Portland harbor and open all week to visitors. It is completely equipped, with accommodations for 500 patients, and in addition to the regular U. S. Staff Line officers for navigation of the vessel, it is served by nine doctors and twelve women nurses.

American Heart Association. The scientific session of the American Heart Association will be held in Portland July 9, during the meeting of the American Medical Association. Details concerning the meeting will be published later.

Pacific Coast Oto-Ophthalmological Society will hold its annual meeting at Salt Lake July 1-2. An elaborate program has been prepared, including papers by leading specialists, on subjects pertaining to the special lines of work covered by this organization. The announcement of the meeting includes attractive details of entertainment in addition to the scientific program. All is arranged in sufficient season to permit arrival at Portland in due time for the A. M. A. meeting.

Gorgas Essay Prize. The Charles R. Walgreen prize of $500, on "The Life and Achievements of William Crawford Gorgas and Their Relation to Our Health" has been awarded to Gertrude C. Stockard of Mountainburg, Ark. The contest was participated in by one out of every 100 junior and senior high school students and by 34 states of the Union.

OREGON

Resignation of Dr. Benson. Dr. Robert L. Benson, professor of pathology and head of the department of pathology in University of Oregon Medical School, has announced his resignation in order that he may enter certain fields of clinical work to pursue further study in the cause and treatment of asthma and allied afflictions. Having obtained the degrees of Bachelor of Arts and Master of Sciences from University of Michigan, he received his medical degree from Rush Medical College in 1910. During his undergraduate period and subsequently he was associated with the department of pathology at the University of Chicago. At Portland he has been active in the development of pathology in the medical school as well as the hospitals of Portland and Pacific Northwest. In addition to his superior work as a pathologist and teacher, his research contributions concerning certain diseases of the heart have received international recognition.

Professor of Pathology. Dr. Frank R. Menne of Portland has been appointed professor of pathology in the University of Oregon Medical School to fill the vacancy caused by the resignation of Dr. Benson.

Sanatorium Heads Named. Dr. G. C. Bellinger, formerly superintendent of the state tuberculosis hospital at Salem, has resigned in order to occupy the position of director of the Salem and The Dalles tuberculosis hospitals. Dr. P. E. Newmeyer has been appointed to succeed him as head of the Salem hospital. Dr. De Walt Payne of Roseburg, county health officer of Douglas county, has tendered his resignation, effective July 1, in order to accept the position of superintendent of the new Eastern Oregon tuberculosis hospital at The Dalles.

New Hospital Opened. Medical and surgical facilities at Klamath Falls were greatly increased by the opening on April 28 of the Hillside Hospital. This institution, built at a cost of $100,000, is owned and operated by Dr. George Marryman and his associates.

Hospital Addition Planned. Construction is expected to begin at an early date on a $350,000 seven story addition to St. Joseph's hospital in Portland. The new structure will be used as a training school and home for the hospital nurses.

Health Demonstration Inspected. Dr. E. A. Wilson of New York, a member of the statistical department of the Commonwealth fund, spent several weeks at Salem during April, where he gathered data relative to a final report of the activities of the Marion County Child Health Demonstration.

California Surgeon Lectures. Dr. Howard C. Naffziger, clinical professor of surgery at the University of California Medical School, San Francisco, Calif., delivered the annual Thomas M. Joyce lecture in surgery before the Portland Academy of Medicine April 25. The subject of his address was "Observations on the Diagnosis and Localization of Intracranial Tumors."

Appointed Medical Director. Dr. Randall F. White, Portland physician, has accepted a position as medical director of the Russian Caucasus for the Near East Relief. With his family he sailed from New York May 4, his destination being Southwestern Russia, where he will have charge of a children's hospital at Leninakhan. He will also have charge of traveling clinics in adjacent provinces.

Unlicensed Practitioner Fined. W. E. Dentinger of Portland pleaded guilty April 27 to a charge of practicing medicine without a license and was fined $100 in District Judge Hendrickson's court. He was arrested last December, after a patient had died following the administration of medicine by his hand. A jury at a previous trial disagreed upon a verdict.

License Revoked. The state board of medical examiners at a meeting in Portland May 4 voted to revoke the license of Dr. Ella K. Dearborn, Portland practitioner. The charge was nonprofessional conduct.

Lane County Medical Society held its monthly meeting at Eugene May 23. Dr. L. L. Stephens of Seattle read a paper, "Treatment of Cancer by Surgery, Radium and X-Ray."

Healer Arrested. J. B. Langdon of Jennings Lodge was arrested late in April on a charge of practicing medicine without a license and brought to Oregon City for trial. He styled himself a "vibration healer" but was alleged to have prescribed medicines to his patients.

Bequest to Hospital. The Good Samaritan Hospital of Portland will share with the Episcopal church of Oregon the major portion of the estate of Mary R. Scadding, widow of Bishop Charles Scadding of Oregon.

Dr. W. E. Gregson, formerly of the Good Samaritan hospital in Portland, has taken over the practice of Dr. V. Gesner at Arlington. Dr. Gesner has been forced by ill health temporarily to retire from practice and has moved to Portland.

Appointed Editor. Dr. G. C. Schauffler of Portland has accepted the position of editor of the *Medical Sentinel* which has been published for more than three decades.

Dr. E. D. Everett of Lakeview suffered severe injuries to his back May 10, when the automobile which he was driving overturned on the highway near Beatty. His wife and son received minor injuries in the accident.

Dr. Calvin S. White, veteran Portland surgeon, is convalescing after a serious illness which confined him to the Good Samaritan hospital for several weeks.

Dr. Thomas Wyatt has disposed of his practice at Baker and has moved to Las Vegas, Nevada.

WASHINGTON

Pioneer Physician's Portrait Presented. At the annual banquet of the King County Medical Society, held at the New Washington hotel late in April, the portrait of a charter member of the society, Dr. Lewis Reeves Dawson, was presented. The painting is the work of Mr. Muehlenbeck of Seattle. Dr. Dawson, who first came to Seattle in 1884, is still engaged in active practice.

County Health Service Offered. For the purpose of developing a full time county public health service in Clark county, Dr. E. T. Ford of the United States Public Health Bureau, has offered the county commissioners federal aid in the form of a $3000 appropriation the first year and $2400 a year for several succeeding years. If adopted the plan will call for the employment of a full time county health officer, two public health nurses, a meat and milk inspector, and a part time physician for indigent poor.

Medical-Dental Building Planned. Construction of a half million dollar professional building for Bellingham physicians and dentists is said to be practically assured. The building will be located at Commercial and Magnolia streets.

Heads Mental Hygienists. Dr. D. A. Nicholson of Seattle was elected president of the Washington Society for Mental Hygiene at a meeting of the board of directors recently.

Indian Hospital Physician Appointed. Dr. John Hup, formerly in charge of the hospital at the Cheyenne Indian agency, has arrived in Toppenish to take charge of the opening of the new Indian hospital there.

The Tacoma Surgical Club entertained members of the Seattle Surgical Society at a banquet and meeting at Hotel Winthrop in Tacoma. Dr. H. J. Whitacre, president of the Tacoma Club. acted as toastmaster.

Golf Tournament Held. Seattle golfing physicians journeyed to Vancouver, B. C. April 25, where they were the guests of Vancouver doctors at a golf tournament. A dinner and entertainment concluded the day's activities.

Whitman County Medical Society, at a meeting at St. Ignatius hospital in Colfax April 23, elected officers for 1929-30 as follows: President, J. L. Gilleland of Pullman; vice-president, L. G. Kimzey, Pullman; secretary, Arthur Harris of Colfax.

Lincoln County Medical Society, at a meeting in Harrington May 12, elected Dr. Glen Snyder of Odessa president and Dr. C. S. Bumgarner of Davenport secretary for the ensuing year.

Klickitat-Skamania County Medical Society held a meeting at Goldendale May 16. A dinner at the home of Dr. F. H. Collins followed.

St. Ignatius Hospital at Tacoma held a staff meeting May 6, at which Dr. James A. La Gasa spoke on "General Observations on Clinical Teaching in Vienna."

Dr. H. V. Wurdemann of Seattle returned last month from an Eastern visit. While at Milwaukee, his former residence, he read a paper before the Oto-Laryngological Society on physical examination of aviation pilots.

Dr. Frank Leslie, eye, ear, nose and throat specialist of Kelso, has moved to Longview, where he has taken over the practice of Dr. R. L. Windham.

Dr. Evan Ardiel of Portland, Ore., has become a member of the staff of the Port Angeles Hospital and Sanatorium.

Dr. W. D. Kirkpatrick of Bellingham has been elected president of the Bellingham Rotary Club.

Dr. F. J. Burns of Spokane has been chosen president of the Spokane aerie of Eagles.

Dr. J. F. Frettes, formerly of La Maris, Iowa, has opened an office in Mt. Vernon.

IDAHO

Osteopaths Cannot Practice Surgery. In reply to a letter from Dr. Andrew McCauley, chairman of the legislative committee of the Idaho Osteopathic Society, to the Attorney General, who asked the following question, "May a person licensed to practice osteopathy practice minor surgery," the reply was a discussion of the statute regarding the practice of osteopathy in Idaho. The Attorney General quotes the Supreme Court on this statute. It provides that "osteopathy is a system of treating the human body without drugs and by means of manipulation. Manipulation does not cover and include the practice of surgery in any form." This decision, therefore, excludes the practice of any form of surgery by osteopaths in this state.

Health Unit Assured. An appropriation of $5400 by the commissioners of Twin Falls county has assured the establishment of a full time county health unit, consisting of a physician, two nurses and a sanitary inspector. The Rockefeller Foundation will contribute $2400 toward the expense of the unit and $1500 will be provided by the state and federal departments. Dr. David Cowgill, formerly of Oklahoma City, Okla., has been appointed full time director of the health unit.

Insanity Fees. The recent session of the legislature amended the statute relative to fees of physicians as follows: "The physician attending the examination of each insane person is allowed * * * $10.00 and mileage, but in complicated cases the fee shall be set at the discretion of the Judge, to be paid by the county treasurer of the county where the examination was had, on the order of the board of county commissioners."

Railroad Surgeons Meet. Physicians of the Oregon Short Line Medical Association held their annual meeting at Pocatello May 18. Mr. Carl Gray, president of the Union Pacific system, was the guest of the association. Officers for the ensuing year were elected as follows: President, Dr. E. A. Roberts, Pocatello, vice-president, Dr. R. C. Monahan, Butte, Mont.; secretary, Dr. H. H. King, Montpelier; treasurer, Dr. J. G. Riser, Salt Lake City, Utah.

Spotted Fever. Several cases of spotted fever have been reported this spring in Southern Idaho. There were two fatalities. Sheepherders, working in the sage brush country, have been the principal sufferers.

OBITUARIES

Dr. Enio R. Ahlman, Hoquiam, Wash., died in a Tacoma hospital April 23, following a long illness, aged 57 years. He was born at Helsingfors, Finland, in 1872, and graduated from the University of Leningrad, Russia, in 1897. After practicing for a time at Tampere, Finland, he emigrated to the United States in 1908. He was located for a short while in Seattle and later moved to Hoquiam, where he remained until his death.

Dr. R. U. Jeffery, formerly a practicing physician at Issaquah and at Sumas, Wash., died in a Seattle hospital May 8, following a brief illness, aged 37 years. He was born in Canada in 1902, and graduated from the University of Manitoba Faculty of Medicine, Winnipeg, in 1925. After leaving the United States he practiced at Carberry, Manitoba, and later was attached to the Essendale hospital near Vancouver, B. C.

Dr. Christian John Brobeck, prominent obstetrician of Tacoma, Wash., died May 14 at his summer home on Day Island, following an attack of heart disease, aged 45 years. He was born in Kasson, Minn., in 1883, and graduated from the University of Michigan Medical School, Ann Arbor, Mich., in 1907. He came to Tacoma in 1909 and practiced continuously there except for the period of the World War, when he was an officer in the United States Navy.

Dr. Andrew S. MacDougall, Kellogg, Ida., died at the Deaconess hospital in Spokane May 13, following a mastoid operation, aged 38 years. He was born in 1890, and graduated from Rush Medical College, Chicago, in 1919. He had practiced at Kellogg for the past seven years, where he was connected with the Wardner hospital.

Dr. Samuel J. Towland, Yakima, Wash., died at St. Elizabeth hospital at Yakima May 15, following a ten days illness, aged 38 years. He was born in 1891, and graduated from the University of Illinois College of Medicine, Chicago, in 1916. He had practiced in Yakima for several years and was a veteran of the World War.

Dr. Stanley Titus, Spokane, Wash., died suddenly at his home April 23, aged 48 years. He was born in 1880 and graduated from George Washington University Medical School, Washington, D. C., in 1907. He had practiced in Spokane for many years.

REPORTS OF SOCIETY MEETINGS

OREGON

PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., E. B. McDaniel; Secty., E. W. St. Pierre

Portland City and County Medical Society met in the Medical-Dental Building May 1. Dr. E. B. McDaniel presided. Dr. B. R. Kirklin of the Mayo Clinic, Rochester, Minn., delivered an address on "Lung Malignancy." A pathologic demonstration of bronchial carcinomata was made by Dr. Frank Menne of Portland.

At a meeting of the society at the Woman's Club building May 18, Dr. Wm. J. Mayo of Rochester, Minn., was entertained. He spoke of "Blood Dyscrasin as a Result of Splenic Disease."

SOUTHERN OREGON MEDICAL SOCIETY

Pres., C. J. Moser; Secty., E. A. Woods

Southern Oregon Medical Society held its annual meeting at Grants Pass May 15.

Dr. William Mayo of the Mayo Clinic, Rochester, Minn., was the principal speaker and delivered an address on "The Development of the Different Special Senses." Dr. Robert C. Coffey, Portland, Ore., was also a guest of the society. He talked upon "Acute Abdominal Surgery." "The Preoperative Care of Goiter Patients" was discussed by Dr. William R. Adams of Medford.

WASHINGTON

CLARK COUNTY MEDICAL SOCIETY

Pres., R. D. Wiswall; Secty., L. E. Hackett

Clark County Medical Society held a joint meeting April 18 with the Clark County Dental Society at the Oregon hotel in Vancouver. A symposium was held on the subject of diseases of interest to both physicians and dentists.

At the conclusion of the meeting new officers of the medical society were elected as follows: President, J. B. Blair of Vancouver; vice-president, C. R. Zener, Vancouver; secretary, W. P. McMakin of Camas; member of the board of censors, C. E. Flagg of Vancouver.

KING COUNTY MEDICAL SOCIETY

Pres., B. T. King; Secty., H. L. Goss

The general meeting of King County Medical Society was held in the auditorium of the Medical-Dental Building, Seattle, on the evening of May 6, president B. T. King presiding. Minutes of the last general meeting were read and approved.

Dr. George E. Price read a paper on "Cerebrospinal Arteriosclerosis." A clinical study of one hundred cases formed the basis of the paper. Factors of etiology were presented. The average age at which symptoms first appeared was 64.5 years. Males predominated two to one. Chronic septic infections were emphasized as a causal factor. The effect of diet was debatable, though an excess of protein is an etiologic factor. Arteriosclerosis of the spinal cord affects chiefly the lateral and posterior tracts. It must be differentiated from spinal tumor, syphilis of the cord and combined sclerosis due to pernicious anemia. Apoplectic attacks occur in about 26 per cent of cases, epileptiform in about 12 per cent. Arteriosclerotic dementia was described in its various stages.

Dr. C. J. Rohwer read a paper on "Neuroanatomic Diagnosis." The case history was presented of a male of 42 who became dizzy while playing golf. He was nauseated and vomited. While walking he reeled to one side. Speech became difficult. Examination disclosed ptosis of the left eyelid, horizontal and vertical nystagmus, more on the left side. Other neurologic symptoms were described which established a conclusion of a neuroanatomic basis which is known as the occlusion or thrombosis of the posterior inferior cerebellar syndrome. The paper was discussed by G. E. Price and G. W. Swift.

Drs. Herman Behla and E. W. Converse were elected to membership. Applications for membership were read from W. W. Bartine, L. A. DeMerchant, F. J. Leibly, Samuel Max, I. O. McLemore, G. R. Ridlon and C. W. Whitaker.

PIERCE COUNTY MEDICAL SOCIETY

Pres., W. G. Cameron; Secty., W. B. Penney

The regular meeting of the Pierce County Medical Society was held in the Washington Building, Tacoma, May 14, Dr. W. G. Cameron, President, in the chair.

Miss Clancy, of the Public Health Nursing Association, spoke of a survey being made in certain sections of the city relative to the cost of medical care. This was being carried out at the request of the national organization, which is conducting a nation-wide investigation.

PROGRAM

"Treatment of Fractures of the Hip," Dr. Edgar F. Dodds. This was a comprehensive presentation of the history and present status of the treatment of fractures of the hip, illustrated with slides and motion pictures. It was discussed by Drs. W. B. McCreery and James LaGasa.

"Mastoiditis, Pathology and Diagnosis," Dr. A. W. Howe. By means of diagrams was outlined the difference in pathology and diagnosis between the different types of mastoid infection. Also was demonstrated the technic of the von Schilling blood count. The paper was discussed by Drs. Ludwig, Lundvick, Wanamaker, Walsh and Davies.

The application of Dr. Ross E. McPhail was read and referred to the Board of Trustees.

The following officers were elected for 1929-30: President, C. F. Engels; Vice-President, B. A. Brown; Secretary-Treasurer, W. B. Penney. Trustees: E. F. Dodds, D. M. Dayton; Holdovers: H. G. Willard, W. A. Monroe and S. M. MacLean. Delegate to State Meeting, W. D. Read; Holdovers: H. G. Willard and W. B. Penney. Alternate: S. M. MacLean; Holdovers: C. R. McCreery and C. F. Engels.

SPOKANE COUNTY MEDICAL SOCIETY

Pres., Carroll Smith; Secty., R. M. Schulte

Spokane County Medical Society held its regular meeting at Spokane May 9. About sixty members were present. Drs. N. E. Hersey and R. D. MacRae were elected to membership.

Dr. J. W. Mounsey read a paper on "Treatment of Internal Hemorrhoids." Dr. E. E. Flehme read a paper on "Skin Diseases and Infections in Childhood."

The society was informed that the Paulsen estate had offered it space for a library in the Medical-Dental Building. The advisability of establishing a library and means for its maintenance were discussed. It was voted to accept the offer of space, provided funds for maintaining the library shall be made available. Amendments were offered to the By-Laws for the increase of dues to support the library. Data had been secured from various county medical libraries and plans had been made to conform with their experiences. It is expected the library will be established at the completion of the Medical-Dental Building.

WALLA WALLA VALLEY MEDICAL SOCIETY

Pres., J. T. Rooks; Secty., C. J. Johanneson

The monthly meeting of Walla Walla Valley Medical Association was held at the Marcus Whitman Hotel, Walla Walla, May 15. Visiting physicians included Mitchell Langworthy, of Spokane; John H. Harter, of Seattle; F. H. Brush, of Yakima, president of the state medical association; Miss Helen Wilcox, of Seattle, secretary of the Public Health League; Otis Akin and G. Dickinson, of Portland; W. Habel and P. Johnston, of Lewiston, Idaho; Edward Preucel, of Colfax, and a number of physicians from Pomeroy and Pasco.

Dr. Langworthy discussed fractures of the long bones and the newer methods of correcting them, illustrated with lantern slides. He reviewed recent advances in reconstruction surgery, illustrated by observations and recent visits to hospitals in New York, Boston and Philadelphia.

Dr. Harter described the correction of deformities of the nose, face and eyelids. Illustrations were presented by lantern slides and photographs.

Dr. Brush and Miss Wilcox discussed medical organization and functions of the Public Health League, especially as related to legislation.

Dr. H. T. Rooks was elected delegate to the meeting of the state medical association at Yakima in September, Dr. F. C. Robinson being chosen alternate.

IDAHO

KOOTENAI COUNTY MEDICAL SOCIETY

Pres., H. J. Sturges; Secty., J. T. Wood

A meeting of the Kootenai County Medical Society was held at the home of Dr. J. C. Dwyer, Coeur d'Alene, April 18, at which ten members and guests were present.

Dr. J. Semple, former superintendent of the Eastern Hospital for the Insane at Medical Lake, Wash., read a paper on "Differential Diagnosis of Insanity" from the standpoint of a general practitioner. Probate Judge M. G. Whitney, of Kootenai County discussed the paper.

Dr. Nelson T. Hersey, of Spirit Lake, Idaho, was elected to membership in the society.

The following officers were elected for the year 1929: President, Frank Wenz, Rathdrum; vice-president, H. T. Anderson, Coeur d'Alene; secretary-treasurer, J. T. Wood; delegate, H. J. Sturges; alternate, Alexander Barclay, all of Coeur d'Alene.

SOUTHWEST IDAHO MEDICAL SOCIETY

Pres., T. N. Braxton; Secty., A. B. Boeck

The spring meeting of the Southwest Idaho Medical Society was held at Boise April 24. There was an attendance of forty-five physicians.

Dr. Walter G. Schultz of Spirit Lake read a paper on "Relation of Prostatic Infection to General Medical and Surgical Diseases."

Dr. Clarence Snow, Salt Lake, presented a paper on "Cardiac Disease."

Dr. Lyman F. West gave a paper on "Recent Developments in Treatment of Goiter."

Dr. D. L. Palmer, Portland, Ore., read a paper on "Roentgenological Study of Accessory Nasal Sinuses."

The following officers were elected for the year 1929: President, J. C. Woodward, Payette; vice-president, William Koelsch, and secretary-treasurer, A. B. Boeck, both of Boise.

Accidents in Bathing. Is bathing harmful? That depends on the human factors involved and it also depends on the materials and apparatus employed asserts Guy Hinsdale, Hot Springs, Va. (*Journal A. M. A.*, May 11, 1929). Like every other measure used for man's benefit there is in connection with it an unseen danger that may destroy in a moment all the good that otherwise one might derive from a fundamentally useful therapeutic measure. He has made the following classification of accidents occurring during hydrotherapy and bathing: (1) Falls on slippery places in the bathroom; falls on getting in or out of the tub or cabinet; (2) faintness or vertigo in getting in or out of the tub or cabinet; (3) epileptic convulsions; (4) syncope from heart disease; (5) apoplexy; (6) drowning in the tub; (7) scalding in the tub; (8) scalding in the douche; scalding in mistake for cold shower; (9) cabinet burn; (10) deaths in the Turkish bath; (11) dangers of the continuous bath; (12) death from electrical shick while in the bath or bathroom; (13) death from escaping gas in the bathroom; (14) drowning in surf, rivers or lakes; (15) winter bathing in Northern water; cold plunges, and (16) misuse of accessories, such as the hot water bag.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

A Surgical Diagnosis. By J. Lewi Donhauser, A.B., M.D., F.A.C.S. Clinical Professor of Surgery, Albany Medical College, Union University; Associate Surgeon, Albany Hospital, etc., etc. Illustrated. Cloth. 700 pp. D. Appleton & Co., New York and London, 1929.

This is a very admirable book chiefly due to its concise descriptions. There could hardly be imagined a work of this kind so free from all nonessentials. One feels every sentence is weighed and measured and every superfluous word carefully expunged. Even this tendency to brevity is noted in the title of the book, which seems too brief to be correct, unless it were made still more so by omission of the A.

For example, the description of cysts of the neck including thyroglossal, branchial, dermoid, cystic hemangioma and lymphangioma, sebaceous cysts, thyroid bursa, meningocele and echninococcus cysts. All of these are described in detail and then a graphic scheme or chart is given for their differential diagnosis as depending on the age, location, size, consistency, freedom of movement and special data. This method is carried out in the differential diagnosis of lesions in all parts of the body. Four pages are given to the graphic chart on the differential diagnosis of affections of the face, for instance. It would seem that the layman could almost make a diagnosis from so clearly defined differences observable in the various lesions.

But these charts are as nothing compared to the graphic schemes worked out on large sheets for differential diagnosis of acute abdominal pain without shock, of conditions causing chronic pain in the epigastrium, and of acute pain in the right upper abdominal quadrant. The latter spreads out like a map of a country. Then there are eight pages devoted to enumeration of causes of acute abdominal pain arranged, first, without regard to location; and, second, according to the location of the pain in one of the six conventional abdominal regions.

An enormous amount of work has been expended in working out these various charts for differential diagnosis but these only supplement the concise descriptions of differential diagnosis in the text. These charts and tables, however, simplify the subject, strike the eye and activate the mind as no written descriptions can do and, to the experienced practitioner, may at once suggest some forgotten but immediately explicable cause of an obscure condition. The differential charts are applied to all important diseases and symptoms throughout the book, as to hematemesis, jaundice, ascites, etc.

To come now to simpler subjects. Affections causing scrotal enlargements are tabulated on one page. The lesions are then described in concise detail. Next follows a folded chart comprising three pages, showing the differential diagnosis of scrotal swellings with the eleven subjects at the top of the sheet, and at the left hand side of the sheet the symptoms and, reading across the sheet, we see how these symptoms vary with each of the lesions under discussion.

The book as a whole strikes the reviewer as the most satisfactory and successful work on surgical diagnosis that has come to his notice and ranks with Cabot's and French's classical differential diagnosis. The treatment of the abdominal conditions, of equal interest to surgeon and internist and belonging equally to both surgery and medicine, are admirably done. We have not felt so enthusiastic about any medical publication since the days of Osler, Cabot and French, and the first result of reviewing the book will be to order one for home consumption. The only suggestion we have to make is that already made—to eliminate one letter from the book, the letter A in its title. WINSLOW.

DISEASES OF THE THYROID GLAND. By Arthur E. Hertzler, M.D., Surgeon to the Halstead Hospital. With a Chapter on Hospital Management of Goiter Patients by Victor E. Cheskey, M.D., Associate Surgeon to Halstead Hospital. Second Edition, Entirely Rewritten. 286 pp. $7.50. The C. V. Mosby Co., St. Louis, 1929.

This book is written in a practical style and contains much of the same material as the first edition. There is an excellent section on pathology with many good illustrations. The classification is simple, the intention being to clarify the confusion now prevalent in the classification of this disease. The entire subject of the surgical treatment of goiter is reviewed, from the preparation of the patient to his discharge from the hospital. There is an article on the use of Lugol's solution which is a very timely warning to physicians who are in the habit of prescribing it to goiter patients. It would be well for every physician to read this article before prescribing iodine. While there is nothing new in this book, it contains an excellent resume of the present treatment of goiter and one interested in this work will get many practical suggestions from reading it. MOORE.

YOUTHFUL OLD AGE. How to Keep Young. By Walter J. Gallichan. 236 pp. $2.50. The Macmillan Company, New York, 1929.

Of the many books published on deferring old age, this is one of the most interesting, as it presents the subject in some respects different from the usual style of publication, due partly perhaps to its English viewpoint. The author states that how to be healthy, useful and happy though old, is the theme of the book. He believes fanatical faddism in diet and hygiene is as inimical to longevity and hale old age as utterly reckless living. He stresses overeating and drinking as fatal to thousands of western population. A light protein diet is emphasized for the aged, with attention to fat as necessary in the dietary. The sexagenarian should begin the day by drinking from a half pint to a pint of water. Living in a country addicted to beer and other liquors, he thinks a small quantity of ale for daily consumption is not objectionable and that old people are benefited by a little whiskey each day. He states that tea is one of the blessings of civilization but is highly injurious and poisonous when absorbed in undue quantities. It is useful as a restorative.

An unusual feature of this book is the free discussion of sexual life. The author states it is a sign of health and vital power when sexual potency survives after the age of seventy. The retention of virility in old age is not a mere matter of ability to perform the sexual act. Potent interstitial glands preserve the powers of the mind, postpone senility, and aid in the resistance to disease. In the discussion on the renewing of youth, he believes results have been obtained by the procedures of Voronoff and Steinach. He thinks that vasectomy will be the principal method of rejuvenation in the future. Much attention is paid to cares and fears that tend to shorten life. These are sometimes induced by lack of occupation. Many men do not worry until they cease to work, hence the advisability of having some occupation during advancing years. There are many other interesting and useful discussions in this volume.

MODERN METHODS OF TREATMENT. By Logan Clendening, M.D. Associate Professor of Medicine, Lecturer on Therapeutics, Medical Department, University of Kansas, etc. With Chapters on Special Subjects by H. C. Anderson, M.D., J. B. Cowherd, M.D., H. P. Kuhn, M.D., Carl O. Rockter, M.D., F. C. Neff, M.D., E. H. Skinner, M.D., and E. R. De Weese, M.D. Cloth, 815 pp. $10.00. Second Edition. The C. V. Mosby Co., St. Louis, 1928.

This book is divided into two parts. The first includes all kinds of therapeutic procedures, from drugs to psychotherapy, and much of it is excellent. Specific treatment of particular diseases is considered in the second portion of the work. The author gives six different reasons in his preface wherein the common or garden kind of work on therapeutics fails. One of these is lack of sufficient detail. It seems to the reviewer that under treatment of specific diseases in this work a common routine treatment for the more common diseases, such as is followed in large hospital services, could with profit be given instead of a rather indefinite appraisal of many forms of treatment. Of course, it goes without saying that such routine treatment may be improved by modifications suitable to the case in hand but it forms a good basis for rational therapy. For instance, in cardiac decompensation with edema and ascites or hydrothorax, the patient should be put on a Karrell diet, be given a dram of tintcure of digitalis daily till slowing of pulse or vomiting demands reduction of the digitalis or, where this does not suffice, ammonium nitrate in dram doses three times daily with novasurol in ½ to 1 c.c. intramuscularly every third day.

In this book one finds various treatments for various forms of heart failure under edema, cyanosis, etc. Again, in respect to the treatment of visceroptosis. There is a general recommendation of rest, hyperalimentation, etc., but no definite, exact method of treatment advised such as that in common use. This includes rest in bed for four weeks, the use of agar and mineral oil to secure two daily bowel movements with plenty of green vegetables, and the gradual increase of calories from a 2000 to 4 or 5000 calory diet by the end of the second week, with the constant application of heat to the abdomen with electric pad.

There is no mention of the more modern treatment of angina pectoris by theobromine and euphyllin and yet these are by far the best remedies we possess. Smith, Miller and Garber found an increase of coronary flow of from 20 to 45 per cent with theobromine, and from 40 to 90 per cent with euphyllin, in recent perfusion experiments. So in the treatment of polycythemia, on page 602, the use of phenylhydrazine, the only efficient drug we have, is not noted. The destruction of red blood cells by this agent has been studied carefully by Allen and very satisfactory clinical results have been secured with it by Giffin and others. If, however, one turns to the section on drugs, including phenylhydrazine, one finds here described its value in polycythemia. In the treatment of exophthalmic goiter

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the use of Lugol's solution is given proper consideration but there is no definite direction for its administration. Thus the author found Lugol's solution of great benefit following thyroidectomy but says its use should be discontinued after relief is obtained. This is not in accord with the routine of most goiter surgeons who give Lugol's solution in a certain definite amount, as 10 minims a week for weeks or months after operation in most instances.

Winslow.

The Prevention of Disease in the Individual. By Kenelm Winslow, B.A.S., M.D. Formerly Assistant Professor in Comparative Therapeutics, Harvard University. Third Edition. Seven Printings. Thoroughly Revised. Introduction by Dr. Charles H. Mayo, with introductory notes to different subjects in the book by Drs. Bloodgood, Hall, Peterson, C-E. A. Winslow and Goldthwait. Cloth. 431 pp. $2.75. W. B. Saunders Co., Philadelphia and London. 1929.

Perhaps there is nothing more difficult for a medical writer than the task of writing on medical topics in words sufficiently simple to be understood by the public. Technical language becomes so inherently the property of the physician that he seldom considers that such is as unintelligble to the lay mind as the pages of a book written in a foreign tongue. It may catch an occasional phrase but yet fail to grasp the statement in its entirety.

The author is to be congratulated on having written a book that is at once complete and yet couched in terms readily understood by the average lay reader, and he covers subjects ranging from a discussion of personal hygiene to the complex topic of cancer. In fact, the subject matter covers all the more common diseases and disabilities which are discussed in every household and on which the layman is likely to have pronounced opinions. It should be read by every physician and recommended by them to the public, since an accurate knowledge of medical problems cannot fail to react favorably toward the whole medical profession.

Sturgis.

The Mobilization of Ankylosed Joints by Arthroplasty. By W. Russell MacAusland, M.D., Surgeon-in-Chief, Orthopedic Department, Carney Hospital and Andrew R. MacAusland, M.D., Orthopedic Surgeon, Carney Hospital, Boston, Mass. Illustrated with 154 Engravings. 252 pp. $4.00. Lea & Febiger, Philadelphia, 1929.

This book is arranged in four parts, covering the field of arthroplasty very completely. The first part is a general discussion of ankylosis with a list of functional positions of almost all joints in the body. Part two is given to the consideration of arthroplasty, its indications and contraindications. Various methods of operating on ankylosed joints in the past and present results to be expected are described. Part three gives in detail the operative technic of arthroplasty of the various joints, going into detail of each operation. The volume ends with a short discussion of the prevention of ankylosis in infected and traumatized joints.

The subject of arthroplasty is very well covered and in a practical way, with many illustrations showing operative technic and results, and many case reports are given. There is nothing theoretical in methods suggested, as most every one knows of the great amount of work done by the authors of this volume. It is a book deserving a place in the library of anyone doing arthroplastic work.

Brugman.

Practical Chiropody. By E. G. V. Runting, F. I. S., Ch. A. Founder and First President of the Incorporated Society of Chiropodists. Third Edition. 200 pp. $3.00. The C. V. Mosby Company, St. Louis, 1929.

This booklet, by an English author, is interesting as an indication that the modern chiropodist is taking his profession seriously, with an effort to establish it on a scientific basis. The author does not attempt to treat all ailments of the feet but suggests that certain conditions should be referred to the surgeon. Naturally he deals largely with corns, technically heloma, if you please, and describes various methods for eradication. He favors excision and describes how to do it painlessly, as is stated. Treatment of various nail affections is described, some of which are according to recognized surgical procedures. Much detail is given to pads and plasters for the relief of various abnormalities of toes and joints. The surgeon might obtain some hints from this volume which would not be amiss in his treatment of feet.

Difficulties in Diagnosis of Insulin Coma. Ernst Wiechmann, Cologne (*Journal A. M. A.*, May 4, 1929). made a series of examinations with the object of ascertaining the degree of intra-ocular tension in cases of diabetic coma and hypoglycemia after insulin injection. Of eight cases of diabetic coma, he found great reduction of the intra-ocular tension in six, while in two cases the tension was normal. These observations show that reduced intra-ocular tension may be present in cases of coma other than diabetic coma. Also in cases of hypoglycemia after insulin injection, he found reduced intra-ocular tension. In eight cases it was at the lowest boundary of the normal and only in two cases below this boundary. This fall in intra-ocular tension in hypoglycemia is not at all to be explained by alteration in the blood pressure. This has been proved by curves of blood pressure and of intra-ocular tension taken simultaneously. One explanation for the reduction of intra-ocular tension in hypoglycemia is to be found in displacements of the body fluids. After injection of toxic doses of insulin, there is a considerable rise in the amount of hemoglobin, which falls again after ingestion of food. In contradistinction to this, in hypoglycemia there is a fall in intra-ocular tension, which quickly rises after ingestion of food. It can be assumed from this that these changes are related to the sweating which is typical of hypoglycemia. The fall in tension would then be the expression of the streaming of intra-ocular fluid and of tissue fluids in general into the blood stream. That there is no consequent reduction in the hemoglobin percentage can be explained by the theory that the addition of fluid to the blood from the body tissues is counteracted by the great andspeedy loss due to the sweating. In all the cases of mypoglycemia which he observed, the temperature fell below 36 C. (96.5 F.). He feels that according to this a fall in temperature is not absolutely pathognomonic of hypoglycemia coma. But according to his observations in general, it happens so often as to deserve a certain amount of consideration in the differential diagnosis between diabetic and hypoglycemic coma.

NUMBER OF BONES DIFFERS WITH AGE

Did you know that a human being has different numbers of bones at different ages? That the number of bones in girls is different from that in boys? Dr. B. C. H. Harvey tells these interesting things about the bones in *Hygeia*. The number of separate bones in a man 40 years old is 206; the vertebral column has 26, the skull 23, the ribs and breast bone 25, the upper extremities 64, the lower extremities 62, the ears 6. In a boy of 14 there are 350 separate bony masses; in a baby boy at birth there are 270; the individual bones of the adult are formed by the fusion of parts that were at first distinct from one another.

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ADDRESS

PROBLEMS OF OUR MEDICAL SOCIETY*

Lee B. Bouvy, A.B., M.D., F.A.C.S.
LA GRANDE, ORE.

By virtue of the authority with which you have so graciously honored me, it is my privilege to welcome you to this the fifty-fifth annual meeting of Oregon State Medical Society. For the Eastern Oregon District Medical Society and the citizens of La Grande, I would express the hope that every one will feel the inspiration of kindly interest and cordial good fellowship which has been so characteristic of our former meetings and which has aided so materially in the society's numerical strength and scientific accomplishments.

Since the inception of the society it has annually been the custom for the presiding officer to unburden his mind of thoughts, the result of his experience and meditation upon scientific and other problems which interest the society as a group. As we have distinguished guests for the scientific contribution, I will confine my brief remarks mostly to other problems which confront us.

We have assumed the task of advancing the practice of medicine in Oregon. Only a few are blessed with the imagination and enthusiasm for research; the rest of us must bind ourselves together for cooperative effort to advance our profession.

In this day, when most anyone can annex the title of "doctor," there is great need for a better understanding between the laity and profession. It is our high privilege and solemn duty to devote a portion of our time and efforts to public health education. The average citizen has a fair general understanding of the problems of personal hygiene and sanitation, but on many very important questions, such as disease prevention and the value of early diagnosis occasioned by periodic health examinations, he is usually doubtful or uninformed. We have not completely sold our ideas to the layman.

Here I wish to stress the necessity of an early antidiphtheritic campaign in Oregon. In 1928 the State Board of Health received reports of 543 cases of diphtheria with 35 deaths. You are fully aware that by proper education and cooperation with the public all of this could have been avoided. We must strongly advocate the Schick test, toxin-antitoxin in all positive cases, and another Schick test after a few months to determine whether an active immunity has been developed. By this means we can hope to see diphtheria completely disappear in Oregon and all civilized localities.

Our duty to public health education with regard to periodic health examination must continually be emphasized. The laity must realize the significance of a scientific medical education and the service which the well trained medical man is prepared to render. Conversely, our limitations should be understood, so that the cultists who frequently promise so much in chronic, hopeless cases may be more thoroughly exposed. We must ever be on the lookout for attempts at obnoxious legislation which gives these different cults more power and recognition. Their bills, without our vigilance and counter efforts, could often be maneuvered through the legislature with little resistance.

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* President's address, read before the fifty-fifth annual meeting of Oregon State Medical Society, La Grande, Ore., May 16-17, 1929.

It is our duty to display these practitioners as being mere exucses for practicing the healing art, in that their preparation has been grossly inadequate. One reason why they are popular with some patients is because these have already visited the doctor of medicine and, perhaps due to the nature of their complaints, he has not taken sufficient interest in the cases. The cultist is usually overflowing with optimistic interest in every case and he soon wins confidence and often is an abuse to our profession.

Our best weapon for the charlatan is our own intellectual advancement which must be nourished by attendance at medical meetings, scientific gatherings, postgraduate study and a firm desire to do the very best for our patients. "Chance favors only the mind which is prepared." The more one sees of medical careers, successful and otherwise, the more one must be impressed with the importance of sound preparation. A thorough education prepares one for the self-education that must follow. It not only enables one to be more useful, and, other things being equal, more successful materially, but it makes one's life much easier, and thus puts one in the state to enjoy life.

Huxley said, "It is only a very strong man who can appreciate the charm of a landscape as he is toiling up a steep hill along a bad road." Good preparation makes the difference between the pleasure of playing the game with skill and assurance, and playing it in bad form and poorly. If one has not had a proper fundamental training and a proper apprenticeship in practical medicine, he must spend much of his time in his earlier years educating himself. And undoubtedly he can do no better than do this. The longer it is delayed the harder it is to do, but no one, during his active career, should feel that it is too late to make the undertaking.

Of course, self-education never ends. That is the laborious part of every profession. But it is at the same time a feature that in medicine, more than in most professions, gives our occupation interest and keeps us intellectually alive. The master word in medicine, as in all other vocations, is not work but intelligence; intelligence to prepare one's self well, to order one's life wisely, even to see the necssity for labor. Intelligence is the master word in medicine, intelligence trained to labor, intelligence that has been educated in learning the rules of the mighty game. To the man who has trained intelligence, to use the words of Huxley again, "the highest stakes are paid." And I think he had in mind in the word "stakes," as I certainly have, not simple material rewards but the substantial satisfactions of life (Wm. Allen Pusey).

Another weapon which we must employ is legislation. Not legislation for special privileges for the profession, but initiated and guided by the medical minds for protection of the public safety and advancement of medical science. At the last session of the legislature a bill was passed providing that 40 per cent of the annual registration fees paid by physicians shall hereafter be devoted to building and maintaining a medical circulating library at the University of Oregon Medical School. This will make available about $2000 annually for equipping the library which will furnish books, periodicals, and conduct a searching service for the licensed physicians of Oregon.

Do you know that a bill was passed providing a penalty not to exceed $1000 fine, and one to five years imprisonment or both penalties, for any practioner of the healing art, whether licensed or not, who fraudulently makes any false statement regarding the physical condition of any person, or who treats a person for an affliction which does not exist?

Do you know that a resolution was passed directing the governor to appoint a committee of nine persons to study the provisions of the Workman's Compensation Law and to make necessary changes?

At the last council meeting Dr. Hugh Mount, Chairman of the Committee on Industrial Affairs, submitted a new fee schedule which raised the present list from twenty-five to fifty per cent. The new rates would compare favorably with those of the adjoining states and the increase would tend to represent the physicians' increased overhead that has occurred during the past several years.

The Basic Science Act died in the Senate Committee. However, the Council of our Society decided in March to proceed with the preparation of initiative petitions to place this Act on the ballot for the general election in November, 1931. I hope every member of our society will acquaint himself thoroughly with the provisions of this Act and will engage in an active campaign in his community to enlighten the laity of its value, so that it may become a law at the general election.

Another bill submitted to the Senate at the last session was by the osteopaths. It proposed to allow them to specialize in eye, ear, nose and throat practice. Immediately the optometrists were highly offended to think of this adidtional competition and the Senate was beseiged with telegrams and phone calls. As a result the entire line, "eye, ear, nose and throat," was stricken from the bill and it was allowed to pass. We thank you, optometrists.

But why should the osteopath be excluded from this line of special practice? If we advocate this, we should also hold that an M.D. in general practice, who has not had adequate special training and experience, should be prohibited from dubbing himself an "eye, ear, nose and throat specialist." We have no legislation controlling this latter condition. However, we do have two well authorized and recognized boards: The American Board for Ophthalmic Examinations, and the American Board of Oto-Laryngology. These boards arrange, control and conduct examinations to test the qualifications of those who desire to practice opthalmology and otolaryngology, and confer certificates upon those who meet the established standards. These certificates designate the competent specialist and serve to differentiate him from the ill-prepared pseudospecialist who cannot meet the requirements of the Board of Examiners. Both of these boards will conduct examinations at the A. M. A. meeting in Portland.

Now, regarding this Portland meeting which indeed is a blessing heaped upon our society. It is the answer to the efforts of Dr. Joseph A. Pettit, trustee of the American Medical Association, Dr. William Kuykendall, delegate, and the doctors who went to Minneapolis last June. In this meeting we have an opportunity which will not recur for many years. Every physician should attend at least a part of the sessions. Each member of the Oregon State Medical Society will wear a badge which will designate him as a host to the many thousand visiting physicians.

In closing, I must again express my gratitude and deep appreciation for the honor you have conferred upon me, probably the youngest president of the fifty-five. My own small efforts for the society would have been futile without the constant help of the faithful officers, committeemen and executive secretary. These men have been a dependable source of loyal support and their unfailing devotion to the society has made my term of service very pleasant. I feel well satisfied with the present condition and the outlook of the Oregon State Medical Society.

ORIGINAL CONTRIBUTIONS

ANTIRHEUMATIC REMEDIES *

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When one uses the term "rheumatism," he may be accused of speaking somewhat vaguely despite his consolation that he may have emancipated himself from the equally vague term "rheumatic diathesis." The old Greek word *rheuma* meant catarrh and really does not apply in rheumatism as known today (Widal, 1912). However, the term rheumatism is convenient and its general implications are understood.

It is still not known whether the different forms of this age-old disease are different manifestations of the same disease at different stages of its progress, or if the forms constitute unrelated disease entities. Our inability to clearly differentiate the different forms exactly or to show their relationship to definite etiologic factors is an outstanding lack of achievement in the history of medicine. We do not even know the cause of the most clearly defined clinical form of rheumatism, namely, acute rheumatic fever. These limitations of our knowledge of the subject are becoming keenly realized in the face of attempted control and prevention, for it is now recognized that rheumatism is one of the scourges of humanity.

The great crippling and invaliding character of rheumatism has been definitely recognized of late years, especially in England where most important statistics of the insured working population have been gathered since 1924. Kinnear (*Lancet,* 1928) estimated the sum of money disbursed under the National Health Insurance Act during 1927 to insured persons on account of rheumatism was five million pounds ($25,000,000). This did not include the cost of medical treatment of persons suffering from rheumatism who are not totally incapable of work. Kinnear's estimate in 1928 represented an increase of three million pounds ($15,000,000) since 1924. Counting lost wages, the total cost of rheumatism to insured people in England is $85,000,000 annually! This is obviously a colossal economic loss. In our country the statistics are limited, but show the same tendency and the same potentialities for harm as in England.

The disease is both a social and medical question. The question is so important that at least three organizations in this country have concerned themselves with it, or plan to do so. The American Heart Association and some of its members have already done creditable work; next year the American Association of Pathologists and Bacteriologists has announced a Rheumatic Fever Symposium; and there has been organized an American Committee on Rheumatic Disease. There are twenty-four countries cooperating in an organized attack on the problem.

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* From the Department of Pharmacology, Stanford University School of Medicine, San Francisco, Calif.

* Address before the Portland Academy of Medicine, Portland, Ore., Jan. 10, 1929.

The fundamental clinical entity in rheumatic disease appears to be acute rheumatic fever. This particular affliction is so serious as to merit the closest attention of investigators. It is the treatment of rheumatic fever that I propose to discuss. The immediate mortality in this condition is low; in fact, so low that gross pathologic material is comparatively small. Consequently, prevention of death is not an immediate concern. The morbidity which follows in its wake is greater than that of some of our worst diseases. This places rheumatic fever in the category of diseases exhibiting a tendency to chronicity, i.e., with syphilis and tuberculosis. The most recent statistics in this country show that, without rheumatic fever, the incidence of heart disease would be almost negligible. For, almost 95 per cent of cardiac disorders in young persons are directly traceable to rheumatic fever. Obviously, the disease and its sequelae sap the vitality of the race. Accordingly it is of the greatest importance to discover the cause of the disease and devise preventive or curative measures.

CAUSE OF RHEUMATIC FEVER

This is probably bacterial, i.e., presumably a streptococcus infection, but the organism has never been isolated and the disease has not been produced experimentally. There are important clinical differences between streptococcic and rheumatic infections; to mention only one, antirheumatic therapy is ineffective in streptococcus infections. The cause, therefore, remains unknown.

The clinical symptoms of rheumatic fever, however, are definite and characteristic so that diagnosis is easy. It is a disease that is characteristically prevalent in regions with a cold, damp climate; that is why it is so common in England and in certain sections of this country. What the factors of cold and dampness contribute is not known. Obviously, the exposed parts are commonly attacked and the local circulation is affected, but how all this results in the peculiar distribution to joints is not known.

SERUM TREATMENT

It has long been and still is the fond hope of many physicians that rheumatic fever may be cured with a specific serum, and prevented, if possible, by immunization. But there are distinct limitations to progress here. In view of the unknown cause, serum treatment must be dubious and has not gained adherents. Without rigid precautions the tests of therapeutic efficiency of a given serum may be quite superfluous because of the well-known tendency to spontaneous recovery from the acute symptoms. Rest in bed and the antipyretic action of serum as a nonspecific protein agent may explain any beneficial results. However, the treatment that is universally successful is by means of the salicylates and cinchophen, sometimes regarded as "specifics."

SALICYL AND CINCHOPHEN

Although chiefly antisymptomatic, there is a possibility tha tprevention and control may be exercised by these drugs. Salicyl has been used in some form from ancient times. Much later came the use of the cinchophen group, which was originally introduced for a different purpose, i.e., for the cure of gout.

The salicylates have long been known to give relief rather spectacularly and are often acclaimed as "specifics," so that, if the patient does not respond favorably, it is claimed that the disease is not rheumatic fever. Thus, these drugs have been regarded as diagnostic as well as therapeutic agents. The specificity is meant in the clinical sense, without reference to eradication of the cause. That is, the very prompt and complete relief of symptoms suggests complete abolition of the disease or cure, although it is known that recurrences are frequent.

The alleged "specific action" is a perpetuated opinion originally expressed by Stricker who introduced the salicylates in the treatment of rheumatic fever. Stricker himself and his predecessors used quinine and acetanilide in treating rheumatic fever with quite satisfactory results, but the relief of the symptoms was so spectacular for Stricker that he was overimpressed with this action, forgetting that the dosage of the salicylates used by him was greater than that of other antipyretics. The side-actions were probably less and this made the relief of the essential symptoms stand out.

Finally, it is obviously quite irrational to speak of specificity in view of our admitted ignorance of the cause of the disease. The salicyl-specificity in rheumatic fever is not comparable with the quinine-specificity in malaria, or of arsphenamine in syphilis, although even in the case of these drugs we must admit complete ignorance of the mechanisms of their therapeutic actions.

It is interesting to note that Ehrlich started on his search for specific remedies from his conviction that salicylate was a specific in rheumatic fever; and he said that there were two other specifics, namely, quinine in malaria and emetine in dysentery. However, Ehrlich had no other basis for the assumption of salicyl-specificity in rheumatism than others have had before or after him. In fact, the thing that actually occurs with these drugs and impresses everyone is the symptomatic relief.

During the past sixteen years extensive and thorough experimental and clinical studies of the salicylates and cinchophen have been made. The leading idea has been to determine, if possible, the mechanism of their action in rheumatic fever. We have tested various theories regarding this, and in addition have studied their general pharmacologic actions, side-actions, toxicity, etc. I shall, therefore, summarize the important results of these studies bearing on the use of the drugs in rheumatic fever, and will try to indicate what it is that is accomplished with them and also to show something of their limitations. The salicylates and cinchophen may be discussed together, as their actions are virtually the same, the main differences between the two groups being chemical.

CHEMICAL COMPOSITION AND STRUCTURE OF THE DRUGS

Salicyl. There are the ortho-, meta- and para-hydroxy-benzoic acids, the difference between them being in the position of the hydroxyl (OH) with respect to the carboxyl (COOH) group, and the iron reaction, both of which correlate with their pharmacologic actions and therapeutic use in rheumatic fever. It is the ortho-acid which is the salicylic acid, and gives the iron reaction, while the others do not give this and are pharmacologically inert.

Acetylsalicylic acid. This compound does not give the iron reaction, but acts in rheumatic fever both as antipyretic and analgesic, the high efficiency being due partly to the acetyl group. It is changed partly to ordinary salicylate, but circulates mostly unchanged, as indicated by excretory results and by hydrolytic changes *in vitro*. This drug is a novel addition to salicyl therapy.

Cinchophen and Neocinchophen. These drugs are quite different chemically from the salicylates. Their properties remind of alkaloids and they contain the important quinoline group which exists in quinine and papaverine. Since the cinchophens act very efficiently in rheumatic fever, this at once suggests the nonspecificity of the salicyl group. They do not give a reaction with iron, which denotes absnce of the phenolic group.

SUMMARY OF PHARMACOLOGIC ACTIONS

The important actions of the salicylates and cinchophen may be briefly summarized as follows (the details have been discussed in a monograph entitled, "The Actions and Uses of the Salicylates and Cinchophen in Medicine," 1927, Baltimore): Absorption is rapid, salicyl appearing in the urine in ten to fifteen minutes; cinchophen is slower. Excretion is rapid. The compounds circulate as sodium salts of salicyl or cinchophen; about 40 per cent of administered acetylsalicylate circulates as such.

Distribution occurs in all body fluids and organs, including inflamed joints. Small doses tend to increase diuresis, but large clinical "toxic" doses decrease it, due to injury of renal function. Sweating is increased, due to increased blood supply to the skin. Respiration tends to be increased, apparently by stimulation of the higher centers. The normal circulation is not importantly affected until very large doses are reached, then some depression occurs, but the accelerated heart of fevers tends to be slowed. In health salicyl increases body temperature slightly or has no effect, but in fever the temperature is sharply reduced. Large, or clinical "toxic," doses cause the well-known symptoms of salicylism or cinchonism (dizziness, buzzing in the ears, nausea and vomiting), which form a valuable guide to the therapy of rheumatic fever.

Seat of emesis. Many physicians still regard the alimentary tract as the seat of emesis, but, from the fact that nausea and vomiting coincide with the onset of the symptoms of salicylism, it is suggested that emesis is a manifestation of central action. It is not due to local irritation because emesis can be obtained after intravenous injection of the salicylate, and movements indicating nausea and vomiting still occur in eviscerated animals. There is a local element in the emesis after administration of free salicylic acid and cinchophen (an acid) because these acids are irritating. For that reason sodium bicarbonate is prescribed with these drugs, i.e., to avoid liberation of the free acids in the stomach.

With neocinchophen the local irritant action is reduced to a minimum by reason of the fact that it is a comparatively insoluble ester of cinchophen. The drug, however, is dissolved enough in intestinal juices to be slowly absorbed.

We may now consider some details of salicyl action which have been assumed to have a bearing on the mechanism of its antirheumatic action. It has been said that this is a record of what we do not know about these drugs, but this reaction could only come from what we do know.

Antiseptic action of salicylates. The bacteriostatic or germicidal action of the sodium salts is negligible. Some urines of patients receiving large doses of salicyl may stand for a short time without putrefaction, but in these urines free salicylic acid has probably been liberated. The free acid is liberated at a lower pH (higher hydrogen ion concentration) than can occur in tissues and blood. This is important when the possible mechanisms of the action of salicyl in rheumatic fever are considered. *In vitro,* 1:500 of the free acid is bacteriostatic.

Liberation of salicylic acid and its bactericidal action in rheumatic fever. Liberation of the free acid and consequent antiseptic action in the tissues, especially in inflamed joints, had been advanced very early as an explanation of the spectacular action of salicyl in rheumatic fever. If this were true, it should be possible to demonstrate the acid by shaking out with immiscible solvents, such as ether or petroleum ether, which removes free salicylic acid with great avidity. But we could find no free acid in joint fluids of rheumatic fever patients receiving clinical toxic doses of the drug. In dogs, in whom fatal asphyxia was produced and thereby the blood made acid to pH 6.8, still no free acid could be demonstrated. Accordingly, the theory of antiseptic action by liberated free salicylic acid was not supported by facts.

Concentration of salicyl in joint fluid. It has been suggested that a possible higher concentration of salicyl in the inflamed joints could explain the favorable clinical action in rheumatic fever. The evidence supporting this suggestion was that the joints of experimentally infected rabbits contained more salicyl than those of normal rabbits, but the tests were not critical. Actually the concentration found by us in the joint fluid of rheumatic patients receiving full therapeutic doses of salicyl was the same as in their bloods, namely, 0.02 per cent. Incidentally, this concentration is only 1/10 the bacteriostatic concentration (1:500) of free salicylic acid *in vitro.*

Other possibilities in antirheumatic action. Urinary excretion of salicyl is less, if anything, in rheumatic fever, the loss being due to destruction by the fever and not to a greater salicyl-avidity of the rheumatic tissues.

Immune bodies in rabbits appear to be diminished. Salicyl- and cinchophen-treated rabbits with infections die before the untreated ones. The number of swollen joints and the degree of swelling may be somewhat reduced in rabbits infected with nonhemolytic streptococcus. Accordingly, Swift feels that these drugs exert important effects on the exudation. That is, they inhibit and promote absorption of the joint exudates and exert similar effects on the heart, thereby reducing cardiac injury.

There is evidence that salicyl and cinchophen increase the permeability of certain tissues. For instance, the threshold of the kidney for uric acid excretion is lowered, the uric acid being increased in the urine and reduced simultaneously in the blood after administration of either salicyl or cinchophen. This is ascribed to an increased permeability of the kidney. From this it has been suggested that the antirheumatic action of these drugs depends on an increased excretion of toxins. However, this is only speculative, for it is not known what, if any, toxins there may be. It would seem plausible that an increase in tissue permeability would favor removal of joint effusions and reduction of swelling, but the same mechanism could conceivably also increase these processes. That is exactly what we found after large doses of salicyl and cinchophen in various experimental edemas.

COMPARATIVE ANTIPYRETIC AND ANALGESIC ACTIONS IN RHEUMATIC FEVER OF UNRELATED DRUGS AND MEASURES

If there is one thing definitely known about the action of salicyl and cinchophen groups in rheumatic fever, it is that they give symptomatic relief. That is, they promptly and greatly lower the temperature and relieve the joint pain. In other words, the two outstanding actions are antipyresis and analgesia. If chemically unrelated drugs and measures could do the same, then the alleged specificity of the salicyl-cinchophen groups would fall to the ground and by the same token the mechanism of symptomatic relief would be supported. It is known that other drugs had been successfully used in the treatment of rheumatic fever before salicyl and cinchophen were discovered.

We, therefore, planned observations on patients with rheumatic fever, to whom we administered morphine and quinine or acetanilide to act as analgesic and antipyretic, respectively. Our results were almost unequivocal. Morphine or papaverine and quinine, which are chemically different from salicyl, gave complete relief. They were not always as efficient as salicyl, because the total dosage was limited by the toxicity of morphine. Jos. Miller of Chicago has reported complete relief with antityphoid vaccine or rest. Swift and associates find that recovery occurs without medication, but it is protracted and sequelae are apt to be greater than with medication.

The important conclusion to be drawn from all this is that the beneficial action of the salicylates and cinchophen is mediated through their antipyretic and analgesic actions, and, therefore, they are not specific in rheumatic fever. It is obvious that a considerable variety of agents, physically and chemically different, exert the same beneficial action. A direct eradication of the disease by any drug is not to be expected, since recurrences are common, despite the largest doses and repeated medication employed; this, too, is against specificity. However, something more than antipyresis and analgesia appears to be accomplished with the salicyl and cinchophen groups in rheumatic fever. For the sequelae of pericarditis and effusions appear to be less and the general circulatory result is better than without drug treatment.

CARDIAC REST

I have already mentioned Swift's suggestion of an antiexudative action in the heart, but more tangible than this is the dynamic rest. That is, the heart of the rheumatic patient is appreciably slowed during the medication and the skin and other vessels are dilated, thus diminishing resistance to the circulation. The general vasodilatation favors the venous return and, therefore, the cardiac output, and also the absorption of effusions. The heart, as is now known, is an important seat of attack by the disease; in fact, the injury to this organ is of the greatest consequence to the patient in later life. The heart needs the rest promoted by the salicylates and cinchophen.

It has been estimated that the cardiac rest is the equivalent of 20 to 30 per cent reduction in rate. Furthermore, White (*Am. J. Med. Sci.*, 1916, 142:589), Cohn and Swift (*J. Exptl. Med.*, 1924, 34:1) and Levy and Turner (*Proc. Soc. Exp. Biol. Med.*, 1927, 25:64) have found that the conduction time is reduced in the disease, and may be restored to normal, i.e., prolonged, by the salicylates. This might be the consequence of antiedemic action in the bundle. Whatever the basis of this action, there seems to be no doubt that the overactivity of the heart during the disease is corrected by the drugs. For this reason, the early administration of salicylates or cinchophen in the disease is imperative to secure early cardiac rest.

As to the endocarditis, salicyl and cinchophen do not prevent it, but may diminish it. It is interesting to note that the valves of the left side are more frequently involved than those of the right. It has been suggested that this is due to the liberation of free salicylic acid and antiseptic action because of a possible acidity (CO_2), or at least lower alkalinity, of the venous blood, but the pH of the bloods in both sides of the heart is the same and free salicylic acid is not demonstrable in medicated patients.

CLINICAL DOSAGE OF DRUGS

For best results the salicyl or cinchophen must be administered intensively and in massive doses, that is, to the limit of tolerance. A common method is 1 Gm. (about 15 grains) every hour until symptoms of salicylism supervene, and after that about 3 Gm. daily as a maintenance dosage, the dosage to be increased to tolerance in case of exacerbation of symptoms. The total dosage varies with the preparation, being smallest with acetylsalicylic acid, largest with neocinchophen and in between these with sodium salicylate or cinchophen. About 0.2 Gm. per kilo body weight of sodium salicylate, or its equivalent in salicyl, generally suffices to bring on the symptoms of salicylism. The choice of preparation is not material, but sodium salicylate is time-honored and dependable; of the newer compounds, acetylsalicylic acid or neocinchophen is preferred by many.

SIDE ACTIONS

The most important side-actions are the symptoms of salicylism and the renal injury. There are albuminuria and diminished excretion of phenolsulphonephthalein in urine and increased blood urea, but these changes are temporary. Increased body weight, indicating edema, occurs simultaneously with the renal injury and is due to the latter. All of these changes, denoting injury to renal functional efficiency, disappear with the excretion of salicyl from the body. The administration of bicarbonate has been claimed to prevent the albuminuria and renal injury, but the facts are that all the changes indicative of renal injury have been demonstrated in patients receiving equal doses of salicylate or cinchophen and bicarbonate, the urine being definitely alkaline. Jaundice and liver injury have been reported after large doses of cinchophen.

POISONING FROM METHYL SALICYLATE

Methyl salicylate (oil of wintergreen) should never be given by mouth in the treatment of rheumatic fever, since the absorption is too irregular. Applied locally to joints, it is not absorbed in sufficient quantity to give symptomatic relief, but it causes some counterirritation and may contribute to the relief. Many cases of accidental poisoning are now on record. In this poisoning acidosis is a prominent factor, being characterized by greatly accelerated respiration, presence of acetone in the breath and urine and reduced carbon dioxide of the blood, but the pH of the blood is not changed. Bicarbonate, therefore, is indicated in the treatment.

"Acidosis" is probably not the cause of the symptoms of salicylism or cinchonism from full therapeutic doses of the drugs, contrary to some clinical assumptions, any lowering of alkaline reserve being mainly the result of accelerated respiration (unpublished results by Dr. Johnson of our laboratory). Bicarbonate is not primarily prescribed for the moderate acidosis that seems to occur, but, as already stated, to prevent the liberation of free salicylic acid or cinchophen and irritation of the stomach; it would, of course, restore any diminution in blood bicarbonate (alkali reserve). It should be remembered that cinchophen and bicarbonate can not be prescribed together in mixture, but they can be taken together.

AMMONIUM SALICYLATE

This compound has been official in the U. S. P. since 1900, but is a relatively unknown and little used salicylate. Used in Russia and during the World War, it was reported to be one of the most satisfactory drugs in relieving the symptoms of influenza. Being an ammonium compound the possibility suggested itself that, since the NH_4 ion is converted to urea, free salicylic acid might be liberated in the tissues, and thus tissue antisepsis might be produced. Accordingly, greater efficiency in the treatment of infections might be procured than with ordinary sodium salicylate.

Dr. Johnson compared it with sodium salicylate in infected rabbits, but no differences in the responses were found. It appears to be a somewhat better diuretic than sodium salicylate and to cause a greater excretion of uric acid. That is, its metabolic actions are somewhat greater than those of sodium salicylate in equal dosage, but these are comparatively unimportant advantages. Its taste is bitterish at first, then sweetish, but large doses are quite as unpleasant as those of sodium salicylate. The therapeutic efficiency in rheumatic fever is about the same as that of the sodium salicylate. Consequently, ammonium salicylate has no merits over sodium salicylate and can be dispensed with from the pharmacopoeia.

SUMMARY AND CONCLUSIONS

1. There are two important and well-tried remedies for the relief and control of rheumatic fever. Intelligent use of these remedies constitutes the first line of defense in treatment.

2. The salicylates and cinchophen should be used in large doses intensively to give prompt symptomatic relief and to rest the heart and circulation, thus conserving cardiac and circulatory efficiency and aiding the natural defenses against the disease and its sequelae. They do not correct or prevent endocarditis and resulting cardiac lesions; nor do they directly eradicate the etiologic or bacterial factor, or prevent recurrence of the disease.

3. The salicylates and cinchophen are relatively safe remedies; they are not specific in rheumatic fever, but they are most efficient in controlling the distressing symptoms. These drugs combine a most fortuitous set of circumstances, namely, they are so safe that they can be given in massive doses almost with impunity, and thus spectacularly secure prompt and complete relief from the high fever and marked pains in the joints.

4. The drug treatment should be combined with adequate and prolonged rest in bed as the second line of defense, even after the acute symptoms have been controlled by the drugs. These two procedures are the best and most efficient treatment at our command today. There is as yet no reliable specific serum therapy of rheumatic fever, except as symptomatic relief with various nonspecific agents may be obtained.

ORTHOIODOXYBENZOIC ACID

THE USE OF ITS AMMONIUM SALT IN THE TREATMENT OF CHRONIC ARTHRITIS

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During the past half century there has accumulated a voluminous literature pertaining to the etiology and the treatment of chronic arthritis. The wide diversion of opinions as to the cause and rational management of this disease leads to the inevitable conclusion that very little real advancement has been made.

Practically every author who has made a careful

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* From the Mason Clinic.

* Read before the King County Medical Society, April 8, 1929.

study of this problem has suggested a new classification based upon his own findings. Perhaps the most widely accepted classification is that proposed by Richard and Nichols in 1909. They divided the joint lesions of chronic arthritis into two pathologic groups: (1) Those which arise from primary proliferative changes in the joints, chiefly in the synovial membrane and in the perichondrium, to which type they gave the name proliferative arthritis; (2) those which arise primarily as a result of degeneration of the articular cartilages, to which group they gave the name degenerative arthritis.

Further enlightenment in the classification of the arthritides may be gained if one groups them according to etiology:

1. Infectious arthritis of known etiology, including that due to streptococcus, staphylococcus, gonococcus, tubercle bacillus, spirochete of syphilis, and that occurring during such acute infectious diseases as typhoid fever and dysentery. The joint manifestations in this group may be either acute or chronic, according to the etiologic agent involved. In all of these there occurs pain, redness and swelling of the joints. Fluctuation and muscle spasm are commonly present.

2. Toxic arthritis of unknown etiology is the commonly accepted term employed to describe the larger group of cases. This form of the disease is usually chronic, although it is frequently characterized by acute exacerbations. This type is usually divided into two classes: (a) hypertrophic and (b) atrophic.

The hypertrophic type of toxic arthritis usually occurs in individuals of advanced age, being most common after sixty years of age. It is characterized by marked limitation of motion in the affected joints, due to new bone formation and ankylosis. The Heberden's nodes of the phalangeal articulations are commonly seen in this form of the disease. The typical cases show swelling, deformity and spontaneous pain on motion without redness or tenderness. There is more or less atrophy of the muscles about the joints which is especially noticeable about the Heberden's nodes on the fingers because of the atrophy of the interossei. This type is common in women after the menopause.

The atrophic form begins in the hands and small joints with marked deformity. The fin-shaped hand is characteristic. This type is frequently termed arthritis deformans. It is not so frequently associated with focal infection as is the hypertrophic form. There is no redness, tenderness or spontaneous pain, and exacerbations are rare.

There are other forms of arthritis which do not belong strictly speaking to either of the above groups, such as acute rheumatic fever, which is usually a disease of childhood and early adult life, and is characterized by sudden onset with marked pain, redness, swelling, and increased local temperature affecting many joints in succession. Furthermore, acute rheumatic fever is easily distinguished from all other joint diseases in that it affects the periarticular tissues and is not destructive to the joint surfaces.

True gouty arthritis is seen less commonly and is characterized by the development of tophi about the joint cartilages of the phalanges. If the tophi are not found, a diagnosis of gout is made with difficulty unless the level of the uric acid in the blood is elevated above 5 milligrams per 100 cubic centimeters. Small "punched-out" areas of decreased opacity in the cartilage and bone, as shown by x-ray studies, constitute strong presumptive evidence of gout when associated with hyperuricemia and tophi. In suspected gout the therapeutic test with a high purin diet is a valuable diagnostic procedure.

Rosenow introduced the conception of the specificity of certain streptococci in arthritic infections. Burbank, of New York, has reported encouraging results in the treatment of arthritis by antiseptic and serologic methods. Hall, of Boston, has reported fairly good results as the result of correcting the factors of fatigue, dietary deficiency, endocrine deficiency, constipation and improper body mechanics.

One is greatly impressed by the great number of therapeutic measures which have been proposed for the treatment of chronic arthritis. Most of these have been exploited by hyperenthusiasts and have not survived the test of time. It is a natural consequence that the honest clinician is extremely skeptical about any new methods which may be proposed for the treatment of arthritis.

During the past two and one-half years the experiences of various individuals and clinics with the ammonium salt of orthoiodoxybenzoic acid have been reported in American literature. Many have reported excellent results, others have been less enthusiastic. The purpose of this paper is to report the results obtained in the treatment of fifty-one cases with this drug at the Mason Clinic.

The majority of the patients presented long standing or very severe arthritis. In almost every instance many other forms of treatment had been used with little or no improvement. In general, they represent cases of a nature which constitute a severe test of any therapeutic procedure. Twenty-eight were males and twenty-three were females. The youngest individual was twenty-seven and the oldest sixty-eight years of age. The average age was forty-seven years. Eleven of the female patients had passed the menopause. Four cases were of the acute type while the remaining forty-seven belonged to the chronic group. The longest duration of symptoms was thirty-seven years, the shortest six weeks, the average being six years. The chronic cases showed varying degrees of incapacitation and deformities. The great majority of the patients belonged to the group of proliferative arthritis. In four instances the development of arthritis was coincidental with the menopause.

The first step in the management of these cases was to institute a careful search for all demonstrable foci of infection. The teeth, tonsils, accessory nasal sinuses, ears, gallbladder, appendix, intestines, prostate gland in men and pelvic organs in women were investigated by clinical, bacteriologic and roentgenologic methods. The tonsils were regarded as a probable focus in twenty-nine cases, the teeth in twenty-four cases, the sinuses in fifteen cases, the bowel in fifteen cases, the prostate gland in eight cases, the gallbladder in seven cases, and the female pelvic organs in five cases. Where infectious foci were found, an attempt was made to treat them appropriately. Twenty-five of the patients had various operations for the removal of probable foci of infection.

In twelve cases with marked impairment of function physiotherapy was continued throughout the course of the treatment. These measures consisted of baking, massage, steam baths, diathermy, light treatments, passive movement and exercise. Orthopedic appliances were used in but two cases.

A hemoglobin estimation was made in three-fourths of the cases; over one-half of these patients gave evidence of secondary anemia. It is our impression that the anemia which accompanies these cases of arthritis is responsible for many of the complaints of numbness, tingling and coldness in the extremities, and is a factor underlying the systemic weakness. The anemic patients received small doses of iron and arsenic by oral administration over a long period; in general, they showed marked improvement. Four patients were found to have a basal metabolic rate below normal and were given thyroid extract with good results.

Blood sugar, blood uric acid and blood calcium determinations were made in sixteen of the chronic cases. The highest blood sugar value was 150 milligrams per 100 cubic centimeters of blood, the lowest 90 milligrams, the average 112 milligrams. These findings do not support the belief of some writers that hyperglycemia frequently accompanies chronic arthritis. The highest uric acid value was 4.4 milligrams per 100 cubic centimeters of blood, the lowest 1.8 milligrams, the average 2.94 milligrams. In only one case was the blood uric acid reading high enough to justify the institution of a low purin diet. The highest blood calcium value was 12 milligrams per 100 cubic centimeters of blood, the lowest 10 milligrams, the average 10.76 milligrams, indicating that there was no important disturbance in calcium metabolism.

The employment of orthoiodoxybenzoic acid in the treatment of arthritis, especially infectious arthritis, is based upon its germicidal power for streptococci and staphylococci and upon its power to stimulate body defense mechanisms. Smith concluded that the IO_2 radical is the important part of the salt and he considers that it acts as a physiologic oxidizing agent. He feels that the high iodin content is held in combination with oxygen in such a way that it is physiologically inert and that there is no fear of inducing hyperthyroidism.

Intravenous injection is the method of choice in administering the drug. The standard dosage is one gram of the salt dissolved in 100 cubic centimeters of warm sterile physiologic salt solution, given twice during a week. For the first injection it is desirable to give but one-half gram as a precaution against a severe reaction. It is injected by the gravity method and must be introduced slowly, allowing ten to fifteen minutes for the 100 cubic centimeters to enter the vein. It is wise to use a needle of small caliber in order that the rate of injection may be more easily controlled. During the injection the patient usually experiences a curious burning and smarting sensation of the eyes, tongue, mouth and nasal mucous membrane, accompanied by lacrimation, a "heavy feeling" in the chest and abdomen, and pain in some of the affected joints. This reaction subsides in ten or fifteen minutes in most instances. A delayed reaction may appear within a half hour after injection, consisting only of a feeling of malaise and nausea or rarely more severe symptoms such as chills, fever and vomiting may develop.

The drug is best given in courses of six to ten doses, at semiweekly intervals with a rest-period of three or four weeks between courses. In our group of fifty-one cases a minimum of five and a maximum of twenty injections were given. Three patients received less than one course, thirty-four received one and fourteen two courses. Seven patients were treated while in the hospital and the remaining thirty-four as ambulatory cases. The patients in this series were under observation from one to sixteen months, the average period being three and one-half months.

The criteria by which improvement has been judged are diminution in pain and swelling, subjective sense of greater freedom of motion, actual objective improvement in joint function and improvement in the patient's sense of general wellbeing. The factors of age, sex and duration of the disease were found to have but little effect on the results of the treatment. More important factors influencing the result were the severity of the disease and the degree of loss of function because of crippling deformities. A rather conservative estimation showed that marked improvement was observed in 12 cases or 23 per cent of the 59 cases, moderate improvement in 17 or 33 per cent, slight improvement in 15 or 30 per cent and no improvement in 7 or 15 per cent. Thus we have found that more than one-half of the patients showed definite improvement after the use of this drug.

We believe that it is impossible, with the use of this drug alone, to cure a patient with arthritis who has developed permanent deformities. The proper approach to the treatment is a combination of procedures, including the removal of all demonstrable foci of infection, the institution of general hygienic measures, the correction of anemia and endocrinal deficiencies, the use of proper vaccines and orthopedic appliances, as well as the administration of the ammonium salt of orthoiodoxybenzoic acid.

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BLOOD PRESSURE

ITS PHYSIOLOGIC VARIATION

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The more instruments of precision utilized in measuring objective conditions in patients, the better the evaluation of any particular case. That help is gained by blood counts, serologic blood study, blood chemistry, bacteriology in general, x-ray diagnosis, blood pressure determination, etc. is unquestionable, and yet, unless constant check is maintained, a problem of fundamental importance is frequently overlooked. This problem is the normal or physiologic limit of variation in living organisms in contradistinction to the pathologic variation. A normal individual has physiologic variations in every single reaction. Equally true is it that a pathologic condition has normal physiologic limits which must be evaluated before a precise interpretation can be rendered.

The purpose of this presentation is to review and call to mind certain variations in blood pressure determinations which are purely physiologic. A brief review of a few illustrative cases may show how these variations play a part in diagnosis and treatment.

That blood pressure in normal man does vary is just as well established as the fact that temperature, pulse rate and respiratory rate vary. This is commonly overlooked. Physiologic variations in blood pressure can be conveniently considered under two headings, namely, variations in different individuals and variations in the same individual.

VARIATIONS IN DIFFERENT INDIVIDUALS

There is, from stand point of age, a decided difference in the normal blood pressure. In infancy the lowest normal value is encountered, while up through puberty and into early adult life there is a gradual increase until the normal adult reading is reached. This in itself has a wide range but is generally considered to be 100 to 130 mm. of mercury for the systolic level and 65 to 100 mm. for the diastolic level. In normal old age systolic pressures are usually between 135 to 145 mm., while diastolic pressures vary less and rarely are over 100 mm.

Contrary to general impression there is no essential difference between normal asthenic individuals and normal thick-necked, ruddy-complexioned, full-

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chested individuals, provided variations due to psychic states are eliminated. Temperament has a very decided effect on blood pressure determinations, excitable and neurotic persons having a higher average and a wider range in daily readings than phlegmatic persons.

VARIATIONS IN THE SAME INDIVIDUAL

It is generally accepted that during sleep the pressure falls to its lowest level, especially during the first few hours, after which there is a gradual return to a normal waking pressure. In reviewing a person's activities during his waking hours a number of factors are encountered which may or may not give rise to variations in blood pressure. Hot or cold baths temporarily raise the level; meals exert a variable effect, while physical exertion acts in two ways. Long continued vigorous work in a trained individual has no appreciable effect, whereas sudden effort causes a rise in systolic level of 20, 30 or 40 mm. of mercury with a rise in diastolic level which is not so pronounced.

A decided fluctuation in blood pressure during the day is dependent upon variations in psychic and mental states. Many discrepancies in reported observations are directly attributable to this factor and consideration of it will explain why we have a so-called diurnal variation and variations at meal times, as well as variations under different postural conditions, such as lying, sitting or standing.

Respiratory variations are of two types. One is due to rhythmic variations in activity of the vagus and vasomotor centers in the medulla, known as Traube-Herring waves. These are of no great practical value clinically. The second type, due to a respiratory state, is a definite change which may occur in blood pressure during inspiration and expiration.

One further cause for differences in readings of blood pressure which can be overcome to some degree concerns itself with manipulation of the instrument. Of course, blood pressure should be measured on a level with the heart, using a 12-14 cm. cuff about the arm. With these requirements filled, all readings of systolic levels will give uniform results. However, great variations in diastolic levels can be obtained merely by making readings during different speeds of decompression of the cuff. This is a purely mechanical factor which depends on the volume of blood allowed to enter the arm below the cuff, while venous return is obstructed, higher and higher diastolic values being obtained as arm volume increases. Diastolic pressure readings can be made to approximate systolic levels by such procedure, as has been shown by King and Garrey[1, 2].

Included in this rather hasty review of physiologic causes for blood pressure variations there are two factors which greater detail and case illustration will bring out more forcibly. The observations cited below were made on patients presenting themselves for various reasons and are in no way seleced. Inasmuch as the same type of reaction was obtained repeatedly, it was not deemed necessary to give all the data collected, a few cases being entirely representative and therefore sufficiently illustrative.

VARIATIONS DUE TO PSYCHIC AND MENTAL STATES

Blood pressure determinations on human beings are notoriously high at the beginning of an examination and, if the pressure has been read at the beginning and then repeated at the end of such an examination, a difference amounting to 10 or 20 mm. of mercury is commonly encountered. Especially is this true in the well labelled "excitable female." To concretely illustrate, two examples are given.

Case 1. W. W., a white female, aged 34, a known case of hypertension of eleven years standing, the highest systolic level being 173 mm. She admits worrying considerably, becoming excited easily and resting very little. The initial blood pressure reading was 164/112 and at the end of examination was 152/100, a decrease of 12 points in the course of an hour.

Case 2. E. R., a colored female, aged 45, a case of hypertension and tertiary lues.

Before starting antiluetic treatment several observations on the blood pressure had been made. At one examination the reading was 204/104 and within 10 minutes had decreased to 174/100, a fall of 30 points in systolic level.

To further demonstrate the effect of mental activity on blood pressure, readings were made during calculations with the following results.

Case 3. R. H., a normal white male, aged 25. The blood pressure at rest was 118/80. During a simple problem in mental arithmetic the systolic level increased to 142, a rise of 24 points.

Case 4. M. D., a normal white male, aged 45. The resting blood pressure was 120/70. During a mental calculation it rose to 150/90, an increase of 30 points in systolic and 20 points in diastolic level.

Observations over a period of time call attention to a few additional matters. Patients with enough interest and intelligence may safely be told a few facts about the blood pressure and encouraged to rest during the day, but need not be given any medication. Partly due to rest but mostly to the fact that these patients become accustomed to the examiner, the surroundings and the manometer, therapeutic results are gratifying. Case 2 is used again because of decisiveness of result. Admission is made that a number of cases of hypertension certainly show a fixation which is not influenced by any of the above enumerated factors.

Case 2. When first seen the blood pressure was 206/120. During a period of observation lasting three weeks, without other treatment than an afternoon rest period, the pressure decreased to 160/110, a total fall of 46 points in systolic and 10 points in diastolic level.

VARIATIONS IN RELATION TO RESPIRATORY PHASE

Turning next to variations in blood pressure levels in relation to respiratory phase, several interesting features are brought out. During quiet respiration there is no change of practical moment in either systolic or diastolic levels, variations of 2-4 mm. being rather insignificant.

However, on forced inspiration or expiration considerable difference can be noted. In general, deep inspiration causes a fall in systolic level, while forced expiration causes a rise. Cases illustrating this follow.

Case 5. L. P., a white male, aged 61, a typical case of hypertensive cardiovascular renal disease. The resting blood pressure was 230/110. On forced inspiration the systolic pressure decreased to 204 and during forced expiration immediately thereafter rose to 218. Also noted in this case was a variation of 4-6 points in systolic level during quiet breathing.

Case 6. P. W., a normal white male, aged 28. The resting blood pressure was 120/60. On deep inspiration the readings changed to 90/70, a drop of 30 points in systolic pressure and a rise of 10 points in diastolic. The pressure returned to 120/60 on resting. During forced expiration there was a momentary rise in the systolic level to 134 but the increase was present over so short a time that the diastolic level could not be read.

COMMENTS

Obviously a great number of factors come into play in interpreting blood pressure determinations. The same was true of determinations of the body metabolism and the outgrowth of this difficulty was the establishment of the basal state. This state also fulfills all necessary requirements for elimination of physiologic variations in blood pressure. To make all blood pressure determinations in a basal state would give far greater accuracy in comparative work and would allow proper evaluation of therapeutic procedures but, needless to say, such an attempt in routine work is not always practical. Yet it is within the power of every physician to recognize the possibility of a physiologic variable.

Results are more gratifying and permanent and more patients can be cured or alleviated by simple tests along the suggested lines. Happily the rough method of calculating normal blood pressures by adding 100 to the age is falling into disuse. Unhappily this method is still making invalids out of normal people who have become frightened by an increase or decrease of 10 or 20 points in their blood pressures.

A few therapeutic deductions may be made. It is quite easy to persuade hypertensive patients to rest more, when they actually see that such rest will reduce their blood pressures. Excitement and worry become problems for solution by the patient instead of by his physician. A recent article by Rappaport[3] shows that respiratory exercise can be made into a real therapeutic procedure.

In conclusion, variations in blood pressure are found between different individuals and even in the same individual, due to purely physiologic causes irrespective of pathologic considerations. Blood pressure determinations, insofar as practicable, should be sought in the basal state; otherwise, due allowances should be made for variations in order to reach reasonably accurate findings.

Janeway[4] sums the case up when he says: "Because the pulse rate may reach 120 during exertion or excitement, the rapid pulse of fever is no less significant . . . Similarly we must know thoroughly the causes for changes in blood pressure during health; then we . . . shall be able, by excluding or taking account of them, to recognize and value the pathologic indications."

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VOMITING OF PREGNANCY

A SIMPLE PLAN FOR PREVENTION AND EARLY TREATMENT *

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I have headed this paper "Vomiting of Pregnancy," because I wish to take up that condition which precedes the severe form of vomiting, known as hyperemesis gravidarum. In the last few years there has been a great deal of experimental work done and numerous articles written about this disease and rightly so, for it is a condition occurring

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frequently but given slight attention by most physicians. Morning sickness, as it is popularly known, is considered almost universal and treated with levity by the laity as a necessary evil of early pregnancy. However, it is not such a trivial affair, and anyone who has ever passed through an attack of seasickness can appreciate what these women suffer. Weeks of slight discomfort and annoyance may culminate in days of extreme distress, accompanied by constant retching and vomiting, with death not far off. This condition is largely preventable and easily curable with a little care or attention in the early stages.

I have nothing new to advocate in the way of etiology or treatment of vomiting of pregnancy, but merely wish to correlate that which has appeared before and to set forth a plan for prevention and early treatment which I have used successfully, in the hope that it may prove useful to others.

It is hardly necessary to dwell upon the nature or symptoms of a disease that occurs in from fifty to sixty per cent of all pregnant women, and which one might say is the "bugbear" of nearly every practitioner. All are familiar with the fact that any one of the cases of pyrosis or slight morning sickness may gradually or more suddenly turn into a true and severe case of hyperemesis gravidarum or toxic vomiting.

However, a recent study made by Gardiner is interesting to note. He put two women, who had been unable to retain any food for one and two months respectively, under the fluoroscope and gave them a barium meal. The barium settled to the greater curvature of the stomach. The movements of the stomach were sluggish, but no signs of reverse peristalsis were observed. Even artificial attempts to produce vomiting by irritation of the epiglottis were unsuccessful. Yet both of them vomited the barium without difficulty shortly after the examination. This would tend to show that the source of stimulation for the vomiting was central rather than local.

THEORIES OF ETIOLOGY

There have been numerous theories advanced as to the etiology of vomiting in pregnancy. I think none of them can be safely said to have been proven the correct one as yet. Perhaps a combination of several of these theories will eventually be adopted to account for the symptoms. At present they may be divided into three main classes, the neurotic, the deficiency and the toxic.

No doubt there is a strong neurotic element present in nearly every case, and some writers have gone so far as to state that this accounts for the entire condition. Atlee adheres to this view and gives as the greatest evidence to uphold his position, aside from the results of suggestive treatment, the success of so many so-called cures. He states that he has cured every patient in the last four years by suggestive treatment, but adds that he does give five per cent glucose by bowel in those that are dehydrated. Treatment based upon this conception may vary from mere mental suggestion to the use of the stomach tube or hypodermic medication.

Under the deficiency class may be included those theories of dehydration, acidosis and carbohydrate deficiency. Harding considers that dehydration plays the most important role and successful treatment depends upon the use of fluids. He does, however, use glucose in his fluids.

Thalhimer is of the opinion that the condition is due to a marked acidosis, as he found the blood alkali reserve considerably lowered and the presence of severe ketonuria. Because of this acidosis he adds insulin to the glucose solution and claims that it causes the disappearance of the acidosis even more rapidly than it relieves the coma of diabetes.

Titus and his coworkers hold there is no doubt that the mother is suffering from a carbohydrate deficiency, on account of the sudden demand for glucose on the part of the developing embryo. If the mother's diet is rich in carbohydrates, there should be little or no toxemia, but if it is deficient in this regard, the needs of the embryo are met by a depletion of the glycogen of the maternal liver. This leads to a fatty replacement in the cells formerly storing glycogen, and later to a fatty degeneration, if the deficiency is not corrected. Consequent on this impaired liver function and the resulting toxemia there develops an acidosis, an increased demand for carbohydrates and an intolerance for food. Hence the mother feeds on her own tissues, and a vicious circle is established.

According to Titus, this carbohydrate deficiency is of two-fold origin, (1) a relative deficiency due to an unexpected demand for glycogen on the part of the fetus and enlarging uterus, and (2) an actual deficiency from lessened carbohydrate intake, augmented in the presence of nausea and vomiting. He considers the use of insulin contraindicated for the reason that the storage of glycogen in the liver is desired and not its rapid combustion.

The sudden cessation of the vomiting at the third month in many cases is explained in that the fetal liver has then reached full development, and by storing its own glycogen relieves the drain on the maternal liver.

The neurotic element may be explained thus: A normal pregnancy is marked by heightened nerve reflexes. An unduly sensitive sympathetic nervous system will result in diminution of glycogen in the liver, because excitation of that system produces an excess of sugar in the blood at the expense of glycogen in the liver, which is followed by vomiting.

In support of this theory, Titus and Dodds studied the blood sugar of forty patients classified in the severe and moderately severe groups and found lowered values, which they claimed indicated a depletion of the glycogen reserves. They also found that the pancreas was able to manufacture its own insulin in direct response to sugar injection.

In reference to the controversy over the use of insulin with glucose injections, Quigley states that he has found it of value when the liver damage is so advanced that complete oxidation of the carbohydrate intake is impossible. Otherwise its addition is unnecessary.

The third general class of theories has to do with the presence of some toxic agent. What this agent is forms the basis of the different theories. Some observers hold that it has its origin in the fetus or placenta, and derive their arguments from the fact that an abortion practically always puts an end to the vomiting. Others think the toxic element arises from the intestinal tract. A large percentage of pregnant women are troubled with constipation. Alverez states that pelvic engorgement consequent on pregnancy causes intestinal irritability and reverse peristalsis, terminating in nausea and vomiting. Dieckmann and Crossen believe that the exciting cause of change from morning sickness to severe vomiting may be constipation or some nervous irritation, a period of starvation, a dietary indiscretion, or a nasopharyngitis or sinusitis producing vomiting.

Somewhat along the line of an intestinal toxemia is the theory that Gardiner recently advanced. He states it is well known that there is a relationship between the genital and intestinal tracts, as evidenced by the fact that many women who need laxatives most of the time must refrain from taking them while menstruating. His theory is that some substance with a local sphere of influence causes a condition of inactivity when impregnation occurs. This extends by contiguity through the tube into the intestine, causing the involuntary muscles of the intestinal tract, in order to protect the ovum, to quiet down, even to such an extent as to simulate a partial or at times complete intestinal obstruction, which in turn gives rise to reverse peristalsis, thus producing nausea and vomiting. He believes that this protective substance arises from the zygote or the chorionic villi.

By his theory he accounts for the fact that man is the only animal that suffers from the vomiting of pregnancy, because he is the only one who has assumed the upright position, thereby bringing the intestine to rest more closely upon the genital tract. Based upon this idea his treatment is to separate the two tracts by placing the patient face down and elevating the foot of the bed so that the buttocks are on a level above the shoulders. This position, plus sedatives and fluids by bowel, has given him some very good results.

However, that there is present in some cases a severe toxemia cannot be doubted. A certain few will get worse no matter what treatment is given them until, without the benefit of a therapeutic abortion, they will most certainly die. That these cases are rare should merely serve to put us on our guard.

De Lee says that he is "deeply jealous of the men who report numbers of cases without the loss of a mother or baby. The only vitally important element in the treatment of hyperemesis is to know how to tell if a given patient is suffering from true, acute, toxemic vomiting, i.e., the hepatic form. Here one must empty the uterus to save the woman's life. Such cases are very rare. A man may go years without seeing one, but in the meantime, by successfully treating mild cases he will have fooled himself into believing the others do not exist."

PATHOLOGY

The lesions found at necropsy vary, but seem to comprise mainly changes in the liver and kidneys. According to Williams there may be necrosis of the central portion of the liver lobules or a marked fatty degeneration of the entire liver. The renal lesions are degenerative in character, limited to the convoluted tubules, and occur only in the terminal stages of the disease. Practically the same lesions are found where death has been due to starvation or inanition. There is not enough visible pathologic change found at necropsy to account for the change that takes place a few hours before death. Gardiner believes that the immediate cause of death is exhaustion.

DISCUSSION

Which of these numerous theories are we to accept? As the saying goes, "pay your money and take your choice." But I am inclined to the belief that no one of them will answer for all cases. I think that many times the disease has its beginning in a neurosis, vomiting leads to a carbohydrate deficiency and later to a toxic condition, if this deficiency is not met. Here we have all three classes represented. I have no doubt but the vast majority of all women with vomiting of pregnancy start with either a slight neurosis or carbohydrate deficiency. This assertion is made after noting the effect of certain treatments in a number of instances.

But just as surely, there are a few women who either start with a toxemia or rapidly develop it, with whom no treatment is of avail except a therapeutic abortion, and in order to save the woman's life this must be done before the disease has progressed too far. The physician's problem is to differentiate these types and to decide when to produce the abortion. I agree with De Lee when he says, "one cannot rely on laboratory examinations. Clinical observation and a careful evaluation of the effects of treatment will give us the necessary information."

TREATMENT

With these facts in mind, then, let us proceed to work out a plan of treatment which should either control the vomiting or cause us to suspect that it has a toxic origin. My plan has been as follows: I caution all patients against coitus during the second and third months; if vomiting has already begun, I prohibit it entirely. The patient should sleep alone, and in a separate room if possible. She should get as much rest as possible. If restless she should be given some hypnotic, such as veronal or luminal at bedtime.

The bowels should be regulated with some laxative if necessary. An early pelvic examination is advisable, and if retroversion is found it should be corrected at once. The patient should be put upon a high carbohydrate diet, her food consisting largely of cooked fruits, dates and raisins, green vegetables, crackers and cookies, honey, sugar, desserts, orange and lemon juices. I also advise her to indulge frequently in candy, preferably the hard variety such as fruit drops, peppermints, etc.

If more or less persistent vomiting has begun, I have her eat less and more often, seven to eight small meals a day at definite intervals and mostly carbohydrates. She should be relieved of the duties of cooking, and have considerable rest. A breakfast of dry toast or crackers should be served her in bed, at least a half hour before arising. Luminal, gr. 1½, three times a day or bromides, gr. 15 to 20, is of benefit.

If this treatment does not control the vomiting, or it has progressed beyond this stage when the patient is first seen, she should be put to bed at once, preferably in a hospital so as to eliminate family contacts. Give nothing by mouth. Ten to fifteen per cent dextrose solution should be given by bowel in amounts that are retained, usually six to eight ounces. To this should be added thirty grains of sodium bromide every four hours.

In twenty-four to forty-eight hours the vomiting should have ceased and the patient should be able to eat a small amount of dry food at regular intervals. Liquids should be continued by bowel for a day or two longer, and when given by mouth the bromide should be kept up for a few days by mouth also, in doses of fifteen grains three times a day. The patient is then put on the regime outlined above.

If the patient is dehydrated from persistent vomiting when first seen, she should be hospitalized and given glucose intravenously in doses of fifty to seventy-five grams dissolved in two hundred to three hundred cubic centimeters of distilled water once or twice daily. Fluids should also be given by bowel with sedatives, such as bromides or chloral hydrate added. It may be necessary at first to control the retching with codeine or even pantopon subcutaneously. In some cases the glucose solution can be given by duodenal tube advantageously.

After four or five days of this intensive treatment with glucose and sedatives, if there is no improvement, the induction of abortion is to be very seriously considered. Speidel gives glucose intravenously for four days; if no improvement, by duodenal tube four days; then if no improvement, he proceeds to interrupt the pregnancy. Before inducing abortion it is highly advisable and in some states required by law, to have a consultation with one or two other physicians. But the interruption of the pregnancy must be done before extreme exhaustion has set in or it will be of no benefit.

If treatment similar to this is followed, there should be no great morbidity attached to the vomiting of pregnancy and certainly very slight mortality. I have not had occasion to put in practice

Gardiner's idea of having the patient lie prone and elevating the foot of the bed, but as it is a simple procedure and compatible with the other measures outlined, I have decided to give it a trial in future cases.

SUMMARY

Vomiting of pregnancy is a disease to be taken seriously by physicians and proper treatment begun in its incipiency. The origin of the vomiting is apparently central, and numerous theories to account for it are considered, these being classified as neurotic, deficiency, and toxic. The pathologic lesions are similar to those found in starvation, and death is due to exhaustion. A simple plan for prevention and early treatment is outlined.

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PAIN IN RELATION TO THE EXTREMITIES *

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Many valuable contributions have been made on the subject of pain. Its importance from a diagnostic standpoint has usually been stressed with reference to thoracic and abdominal conditions.

In this particular clinic it will be our object to discuss the subject of pain with reference to the extremities. The subject will be discussed under the following headings: (1) Pain in relation to trauma. (2) Pain following operation (acute thrombophlebitis). (3) Pain in connection with disease of bones, acute and chronic infections (acute osteomyeltitis, chronic osteomyelitis and syphilitic bone disease). (4) Vascular disturbance in association with certain constitutional diseases (Raynaud, Buerger, Weir-Mitchel's disease and arteriosclerosis). (5) Pain in association with disturbance of weight bearing will not be discussed.

1. PAIN IN RELATION TO TRAUMA

Everyone is familiar with the pain which immediately follows injury and we have come to realize that localized pain is the most important of all manifestations in connection with diagnosis of fracture. It is also recognized and accepted that, when the deformity associated with fracture has been reduced, if the bandage is not too tight, the patient should be free of pain. The habit of giving sedatives for the relief of pain after the application of a bandage cannot be condemned sufficiently.

Pain is an indication of only two things, that the bandage is too tight, or the reduction has not been complete. If suspension and traction methods have been used, the persistence of pain is an indication that there is too great traction.

The relief which is experienced by the patient by loosening or removal of a bandage which is too tight, I am sure is appreciated by all. Yet we know that such complications as Volkmann's ischemia occur. Each time it does occur the surgeon in attendance might well accept the responsibility for this disabling condition.

It may not be necessary to dwell on this subject but to say that, where a patient complains of pain, it is the surgeon's duty to see if there is evidence

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of constriction from bandage, or x-ray indications that the reduction has not been complete are necessary.

2. PAIN FOLLOWING OPERATION

Pain in an extremity following an abdominal operation or during the course of a pulmonary condition may indicate the existence of an acute thrombophlebitis. The manifestations of this disagreeable complication, swelling of the leg, redness, great pain, and the presence in the large superficial veins, particularly the long saphenous, of a palpable thrombus are only too well known.

3. PAIN IN CONNECTION WITH DISEASE OF BONES

Acute osteomyelitis. In opening a discussion on this subject, about which there is still much controversy, there is no need for an apology. This certainly is a crippling disease when not recognized early. The same thing may be said, if proper operative measures are not instituted early.

In order to carry out a certain procedure, conviction must sway one. Therefore, I will outline the convictions on which we have based our treatment of this condition. All are agreed that osteomyelitis is a blood borne disease. This process is either due to an embolic process or thrombosis. Practically all are agreed, further, that there must be some "fixation point in the vascular network of bone" (Wilensky). The fixation point may be in any portion of the vascular network. The nutrient artery perforates the cortex in the middle of the shaft and divides, sending branches in the direction of either end to the diaphysis.

The location of the thrombus or embolus will determine the extent of the involvement of bone. Since the infection is blood borne and through the nutrient artery, it must reach the surface from within. This leads to the inevitable conclusion, as far as I can see, that a subperiosteal accumulation of pus is an indication that there is an infection within the cancellous portion of the bone or in the medulla, depending on the location of the fixation point in the nutrient artery.

If one finds a subperisteal accumulation of pus, either the cancellous bone or the medulla must be drilled. This is emphasized because the editor of "Progress in Orthopedic Surgery," 1923, states, "The difference between Starr's working rule and Cohn's is an essential difference. We take it Starr is discussing osteomyelitis in the immediate neighborhood of a joint. Cohn believes the cortex should always be drilled, whether frank pus is or is not encountered beneath the periosteum. Starr does not drill the bone, if he finds gross pus beneath the periosteum. His experience as child surgeon of the Sick Children's Hospital in Toronto has been a very long and broad one, and he follows his cases carefully. If he was obliged to open the shaft later in any considerable number of cases in which he encountered frank pus beneath the periosteum, or if the majority of these patients did not in his opinion do well, he would not give conservative advice. On the other hand, if in case of osteomyelitis the infection was in the early stage limited to the exterior of the shaft and between it and the periosteum, it would be most unwise, after having provided drainage at the seat of the infection, to drill into an uninfected shaft and perhaps carry the infection farther."

Because of this aparent essential difference it is rather gratifying to me to be able to present for your consideration a statement by Starr in his chapter on Acute Osteomyelitis in Lewis' Surgery, in which he says, "If frank pus is encountered in the incision, this may be sufficient to relieve tension and prevent further subperiosteal spread, because the cortex most likely has been broken through to enable the exudate to reach this location. It is not wise, however, to consider the operation complete at this stage, as in most cases drainage from the cancellous bone to the subperiosteal space is not free. With a chisel a trap should be cut in the cortex above the epiphyseal line and a portion of cortical bone removed to ensure free drainage.

"No curetting of this cancellous bone should be permitted, as it cannot do good and destroys all possibility of restoration of any of the endosteum which might survive. Drill-holes in the cortex obliquely into the cancellous bone, in the direction of the epiphyseal line but not into it, may be quite sufficient if the drill is ample size. If no frank pus is found subperiosteally, the cortical opening or drill hole should be made to relieve tension in the interior and to permit escape of the pent-up exudate."

He hastens, however, to add the following. "In no early case of osteomyelitis is it wise to open the medullary canal either by drill or chisel, as this may easily be the factor in spreading disease up the shaft which would otherwise escape."

In this conection we find Orr in agreement with our point of view when he says, "A surgical opening of sufficient size and extent to drain the primary focus in any bone infection is the first indication.

Metaphyseal or medullary drainage of the first bone infected is definitely indicated.

"In regard to the method of drainage or the type of operation to be employed it is believed that in the early and very acute cases the simple opening (nearly always through the bone) into the abscess cavity is all that is necessary. The surgical opening, however, must be kept wide open; drainage through a tube or leakage between sutures is insufficient."

Robertson of Australia, in *The Medical Journal of Australia,* states, "When a case gives the symptoms suggestive of an osteomyelitis, it is wise to proceed at once to open the integuments at the site of tenderness. The periosteum is cut down upon and, if one is sufficiently early in the disease, a periosteum with edema is the only abnormality in the soft tissue. On division of this the bone underlying seems normal. This should not deter us from making an opening in the bone down towards the epiphyseal line. One will here find a small collection of pus or infected bone. A small window should be cut to permit of adequate drainage and the release of the pressure of infected inflamed tissue."

My own chief, Professor Rudolph Matas, discussing the subject, said, "There are few surgical diseases in which a prompt diagnosis is more telling in its effect upon the future outlook of the patient than this. The relief and security obtained by prompt drainage is one of the happiest and most striking examples of the benefits of timely and judicious surgery.

"In acute osteomyelitis we simply relieve bone tension at the primary focus by incising the periosteum and draining the marrow, if necessary, by drilling the bone sufficiently to give issue to the pent-up exudate."

Whether one accepts the idea that the infection is primarily from within or that it may limit itself to a subperiosteal abscess, is of importance. The acceptance of the latter idea may result in some instances in many secondary operations. To illustrate this point I may introduce the following experience.

Case 1. Miss H. V. was seen by an excellent surgeon and, because he found an accumulation of pus under the periosteum just above the epiphyseal line of the tibia, drained the abscess cavity. After a short while this patient came under my observation with multiple abscesses of the leg and the entire shaft of the tibia riddled with sinuses and sequestra were found. It was necessary to remove almost the entire shaft of the tibia, leaving only the epiphyses and a posterior portion of the bone to act as a splint. The patient eventually reproduced the entire shaft of the tibia, but in the meantime some deformity developed. Had this case been drilled immediately and the focus drained, in all probability the extensive process would not have developed.

In this disease the diagnosis must be made early, if we expect to prevent sequestration and the ultimate crippling effects. In order to make a diagnosis early one must depend on the clinical manifestations and not the x-ray findings.

The radiogram is of negative value here. In the early stage when we are dealing only with nature's response to the infection, the pain is due to increased intramedullary pressure. The early pathologic picture is one of fat necrosis. These changes are not evident radiologically. The radiogram can only be of service by showing a difference in density of the structures involved. Before bone destruction has occurred there is no difference in the density, hence we should not expect to find evidence of rarefaction, and as a matter of fact we do not find such changes. If we wait for such evidence before operating, we will most certainly have to deal with a sequestrum. I believe that on the above point there is pretty general agreement, but at the same time one must have the courage of his convictions, if he is willing to operate only on the clinical manifestations.

This disease is essentially one of childhood, and is rarely found after the epiphyses have united. However, this particular statement cannot be accepted to mean that acute osteomyelitis is never found in the adult or after middle life. I have seen at least two cases, one a man about 65 years of age who developed an acute localized abscess in the cancellous portion of the tibia following a urethral manipulation. This is the unusual case and not the rule.

In children there is often a history of trauma, and it is easy to understand that it may produce a point of least resistance with a slowing of the blood stream, and the focus of infection manifests itself at any point in the shaft of the injured bone.

The outstanding manifestations are sudden onset with fever, leucocytosis, marked toxemia, malaise, redness, localized edema surrounding the area of tenderness, and a definite localized pain over the shaft of one of the long bones. Usually this localization is near the ends of the shaft.

With the history of trauma, localized pain over the shaft of one of the long bones, fever and a leucocytosis there is definite indication for an immediate operation. Delay may mean that we will be too late to prevent the formation of a sequestrum.

In looking over the cases which have come under my observation it is interesting to note how few have been recognized early. Most of them which I have seen have been treated, some for three or four weeks, for pneumonia or acute infections of a similar nature.

Having arrived at a decision to operate, the procedure must be considered an emergency one. The operation should be done as quickly and with as little trauma as possible. There are several points to remember. The bone should be approached by the most direct route without doing injury to important structures. Where possible, approach in the intermuscular planes is preferred. If one finds pus under the periosteum, he should not stop but proceed to open the medullary canal, as the infection has reached the cortex through the Haversian system. The infection is primarily within the canal. The approach to the medullary canal is best done by making use of motor-driven instruments, the drill or trephine. Make a sufficient number of drill openings, after which the several openings are connected on either side by a motor-driven saw. In this fashion as much of the cortex can be removed as is desired. By the above technic we avoid the great amount of trauma incident to the use of the gouge, the chisel and the mallet. The importance of this last statement cannot be stressed sufficiently.

The importance of fat embolism in connection with bone trauma is neither sufficiently understood nor appreciated. Bone lesions are associated with fat emboli. Injury to the marrow results in fat emboli and, further, these emboli are carried off by way of the veins. Warthin reported eight fatalities from fat embolism following fractures. Bergemann as early as 1910 admitted the possibility of fat embolism resulting from jarring of bones and hence suggested the possibility of dispensing with the use of the chisel in surgery altogether. A greater appreciation of its danger following the use of the chisel and other similar instruments which jar and traumatize bone certainly should impress us with the necessity of minimizing trauma, and this is accomplished by motor-driven instruments.

By the above method the canal is opened rapidly. One may only find a few fat globules. This and not frank pus is evidence of an early diagnosis. At this point one may by the injudicious use of the curette or other instruments do great damage. The object of the early operation is to relieve tension and to provide free drainage. This is accomplished by simply opening the canal.

The curette may and probably often does great damage by injuring the endosteum, the active bone cells lining the pipe stem bones. These are the cells on which we are dependent for regeneration of bone at this level. This is not the only danger. We may injure the nutrient vessel which supplies the greater portion of the shaft. Such injury may result in massive sequestration.

It is only necessary to put in a pack of dichloramine T, or if one prefers he may dakinize. Personally I prefer the use of dichloramine T, as it is simpler and equally as effective.

The results obtained by the above method of treatment are gratifying. Usually there is immediate relief from pain; the temperature drops to normal and the cavity rapidly heals like any other clean wound. There has not been a secondary operation in any of the cases which I have thus treated. The cavity fills up and after a period of one year the defect in the bone is so completely regenerated that radiologically one canot see where it has been.

Early operation should give almost instant relief from pain, a subsidence of temperature, and an early recovery with perfect restoration of function. Early operation should not be followed by sequestrum formation. Early diagnosis and operation should remove osteomyelitis from the class of chronically disabling disease.

The aftercare of a case of osteomyelitis which has been drilled and sufficient opening made for proper drainage is one about which there is considerable difference of opinion. It has been our policy to introduce a pack, making use of dichloramine T, and leaving the pack in situ for about five days. Then at frequent intervals the dressings have been changed with reapplication of the pack.

During the last few years Orr has been advocating that a cast be applied and left on which is not to be cut unless "the wound dressing becomes necessary. And the wound is not to be dressed at all unless there is a rise of temperature or other signs of acute sepsis. As a rule, no dressing is necessary except on account of odor, and this may not be required for several weeks. In a majority of cases the patient treated by this method will go through to complete healing with a few dressings at intervals of from ten days to four weeks.

"It may be said the claims for superiority of the method proposed by the author rest upon empirical rather than upon scientific grounds."

I have not been able to convince myself that this procedure of not dressing the wound is rational. In some instances, where I have left a dressing on for as long as one week, the odor has been so foul that it has been difficult for the attendants to go around the patient, and more than that, the secretions have been so profuse as to macerate the tissue, thus giving rise to additional areas which are subject to infection.

I believe the dressing should be changed once or twice a week. It may not be necessary to disturb the pack, but certainly the outside dressing can be removed and with them the excessive discharge from the wound wiped away. It gives comfort and seems more rational than a prolonged period between dressings.

The cases which come under observation late, where there are multiple sinuses, large sequestra, septic temperature, emaciation and marked secondary anemia, present very difficult problems. Free drainage, removal of the sequestra and transfusion are indicated immediately.

The ravages of acute osteomyelitis are impressively noted in cases in which the diagnosis has not been suspected, and in that group where a subperiosteal abscess has been drained but drainage of the cancellous portion of the bone has been omitted.

SYPHILITIC BONE DISEASE

Syphilis involving the long bones is not an infrequent cause of pain in the extremities. Pain is often the only symptom complained of by these patients. When considering syphilis as a cause of pain in the lower extremities, we must remember that the clinical manifestations are not constant and that the various tests for syphilis, which are positive in some of the other manifestations of the disease, are not present in the greater proportion of syphilitic bone cases. Pain following trauma, particularly if it is persistent and unassociated with fracture or visible lesion in the soft parts, and in the absence of febrile reaction and the ordinary signs of inflammation, should suggest a syphilitic bone lesion. The outstanding fact is that in some cases there is a diffuse swelling of the entire limb, suggesting elephantiasis.

The characteristics of the lesions observed radiologically vary greatly. The radiographic findings in our cases vary from a small area of irregularly thickened cortex to a diffuse swelling of the entire shaft and periosteum. The shadow in this latter type is of the same density throughout, there being no evidence of the medullary canal. As intermediate phases we have noted cases in which there is an increase in the diameter of the shaft at a certain level, with central areas of rarefaction; cases in which there is an increase in the diameter of the shaft, due apparently to a thickening of the cortex alone; cases in which there is an irregular thicken- of the cortex associated with a rarefying central osteitis; cases in which there are small areas of central rarefaction, suggesting the appearance of a simple osteomyelitis, and still other cases in which there are sclerotic changes.

Summary. Syphilitic bone disease is not rare. It is both destructive and productive process. X-ray manifestations vary. Pain, due to syphilitic bone changes, is readily relieved by the proper antiluetic treatment. Unilateral elephantiasis is not infrequently due to syphilis, when there is an underlying bone disease. Varicose veins are often associated with evidence of syphilitic bone disease.

PAIN IN THE EXTREMITIES DUE TO VASCULAR DISTURBANCES

Pain in the extremities is not infrequently associated with the phenomena indicative of disturbance of the vascular system. The etiologic factors in some of these conditions are not definitely known. For that reason very little attention will be paid in this discussion to etiology.

The group to which I refer is classified under the following headings: (1) Thromboangeitis obliterans or Buerger's disease, (2) Raynaud's disease, (3) erythromelalgia, (4) arteriosclerosis alone or complicated by diabetes.

The nature of the diagnosis in many instances is not even suspected until it is too late to utilize conservative measures. Careful clinical examination in suspected vascular diseases will enable us to make the diagnosis more often.

Buerger has outlined the method of making such an examination. He calls our attention particularly to the importance of noting the general appearance of the limb, both in the horizontal and dependent positions, whether there is an ischemia or redness, whether there is a change in the appearance of the limb on elevation. He speaks of the "angle of the circulatory sufficiency," by which is meant that a limb elevated to 180 degrees retains most of its color; when circulation is defective variable degrees of blanching occur. If the leg is gradually depressed, the angle at which the red hue returns will be found to vary considerably.

Particular attention should be directed to the presence or absence of pulsation in the dorsalis pedis and posterior tibial arteries. Careful tests for the collateral circulation, as suggested by Matas and Moschchowitz, should be tried in some cases. During recent years sympathectomy has been advocated for the relief of pain in some of these vascular disturbances, at times with good reason, and in other instances apparently without justification.

Erythromelalgia, or Wier Mitchel's disease, has been extremely rare in our experience. In fact, only one case that I can be certain of has come under my observation. The characteristics in this particular instance were intense pain, particularly when the individual was standing or walking. His pain was so great that he could not stand any pressure on his feet. It was of a burning character. There was a marked redness of both feet and some swelling.

On inspection sweating of the skin and redness were noted. Pulsations in the arteries were full and bounding. There was no history of intermittent claudication and no trophic disturbances.

The only relief which this patient obtained was when the legs were elevated and a continued cooling process resorted to in the form of an electric rotary fan. This case then presented a typical text-book picture of the disease.

Some authorities have suggested that use of sympathectomy for this disease. It seems in this condition that the operation is irrational because removal of the sympathetic produces vasodilatation, while here already we have this condition.

Thromboangeitis, or Buerger's disease, is commonly considered to be found only among Russian jews. That has not been our experience. It is true we have not had a great many of them, but those which we have had under observation have been of Italian, native American descent, as well as the emigrant jew.

This disease is characterized by a slowly progressive course with pain claudication and coldness of the toes. There are recurring attacks of migrating thrombophlebitis, trophic disturbances and the absence of pulsation in the larger vessels of the extremity. There is usually a blanching of the limb and reddening on lowering. The pain is increased on walking and usually ceases when the patient is at rest.

A rather typical case, who complained of coldness and pain in his feet is the following.

Case 2. W. L., age 43 years. About a year and a half ago he noticed a coldness in the toes of the right foot with accompanying prickly sensation as though his foot was asleep. This was remedied somewhat by stamping his foot on the floor, "to wake it up," as he said. This has progressed very slowly. About two weeks ago his left foot became red in the toes over the medial aspect, just above, anterior and posterior to the medial malleolus.

The foot is painful, especially when touched and feels as though it has "fever in it." He is weak in both legs but more so in the right, and suffers from pains in the right knee and both elbows. Has also noted that his toe nails have practically quit growing.

Examination shows no atrophy of either thigh or leg. No evident deformity. There is an irregular area of redness of the inner aspect of the left foot, extending from the base of the great toe upward and to just above the internal malleolus, and posteriorly as far as an inch behind the internal malleolus. The great toes of both feet have a peculiar reddish purplish hue. The nails lack the ordinary glossiness. At the tip of the right great toe is a slight puckering scar, suggestive of an old ulcerated area. The veins of the leg above the ankle are not particularly large, except at noted before.

Palpation: The toes are colder than the rest of the extremity. Dorsalis pedis and posterior tibials of both sides do not pulsate. Elevation of the limb produces slight blanching but not a marked cadaveric hue. The expressive test of Buerger was tried and definite blanching was not obtained. After two minutes elevation, when the foot was put in a pendent position, the peculiar purplish red appearance of the toes was slightly increased. Collateral circulatory test (Matas) was not done, because I was afraid of adding damage to the larger vessels higher up, particularly in the presence of this acute stage.

Diagnosis: Thromboangeitis obliterans was made on the following points: (1) Duration, history of onset a year and one-half ago; (2) slowly progressive nature of the disease; (3) history of claudication and coldness of toes; (4) its recurrent nature; (5) trophic disturbances evidenced by ulceration at tip of great toe which has healed; absence of dorsalis pedis, pulse migrating thrombophlebitis with erythromelia.

Raynaud's disease.

Case 3. The following case history of Mr. R., age 39 years, is of interest. His chief complaint was "frost bite." The story which he gave was that five years ago after a trip to Northern Pennsylvania he had what he thought was a frost bite. The lesion was on the flexor surface of the terminal phalanx. He experienced great pain. The blister formed and the resultant scar was so contracted as to give the appearance of an untreated bone felon. Since that original experience he has had several similar lesions on both thumbs and fingers.

Examination: Ring finger, flexor surface of the terminal phalanx, has a lesion about 1 cm. in diameter which has a granulating base and a slight serous discharge which looks very much like a drop of dew on the surface. The finger has a peculiar cyanotic hue, not a deep cyanosis, but a purplish red appearance.

The palmar surface of the hand is mottled red and white, in fact, giving a marbling appearance. The temperature of the hand is colder than the remaining portion of the body, probably several degrees lower. The hand is wet with perspiration. The opposite hand presents the same appearance. He complains at times of intense pain in his fingers.

On going into his history more carefully we find that he has had several teeth extracted for the relief of painful feet. No relief has been obtained. The feet have the same appearance as the hands. When they are dependent cyanosis is increased, becoming almost a deep purple. Elevation of the legs does not produce pallor, the same being true of the hands. Radiogram of both hands failed to reveal any bone changes which would corroborate impressions which I had of Raynaud's disease.

The outstanding facts of this case as they present themselves are multiple lesions on the various fingers and thumb which have been considered frost bites. Great pain was experienced by the patient. There was a marked coldness of the hands and a marbling of the hands and feet noted. Frost bites are rare in our southern climate.

After carefully considering the various possibilities the diagnosis of Raynaud's disease was arrived at because of the following things: (1) The symmetrical nature of the lesion; (2) peripheral pain; (3) the evidence of vasomotor disturbance, such as ischemia and cyanosis which combined gives the marbling of the skin; (4) pain was paroxysmal, tingling and burning in character; (5) scars were retracted and these had followed a similar blister which had contained bloody fluid; (6) no evidence of obliteration of pulsation, cyanosis increased by the dependent position, and elevation of the leg did not produce pallor.

Since many of these cases are associated with emotional conditions, it is wise in handling them to remove the patient as far as possible from the source of worry and protect the extremities from exposure and cold.

Pain in the extremities in arteriosclerosis. Arteriosclerosis, gangrene and diabetic gangrene are cited together because we do not believe that diabetic gangrene is an essential entity. That it is associated with arteriosclerosis we believe is conceded by most, the only difference being that gangrene occurs earlier when diabetes is associated with arteriosclerosis than when the latter alone is present.

In these cases the age of the patient, the absence of pulsation, the trophic disturbances, the slowly progressive nature of the gangrene and the relief obtained by elevation and heat serves to make the diagnosis. The radiogram shows calcium deposits in the vessels as confirmatory evidence, not a necessity but well to have.

Probably one of the most important considerations in the handling of these cases is the point of section when it is necessary to amputate. This should be made in most cases far enough below the knee to give a fairly good stump, not, however, a weight-bearing stump, as weight-bearing will increase the possibility of ulceration of the ends of the stump, and therefore eventually necessitate further amputation.

Many conditions causing pain in the extremities have necessarily been omitted from this presentation, but enough I trust has been included to justify the discussion.

PERINEPHRITIC ABSCESS

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Abscess about the kidney is not an uncommon occurrence and yet it is frequently overlooked, resulting in unnecessary morbidity for the patient or even terminating fatally from continued sepsis. An early diagnosis with early institution of drainage is the paramount requirement for success.

The sources of infection may be (1) by extension of an infectious process outward from the kidney substance, as may occur in lithiasis, tuberculosis, pyonephrosis, etc., or (2) from an infectious process elsewhere in the body, the extension taking place either by the blood stream, the lymphatics or by continuity of tissue. The hematogenous origin in our experience is by far the most frequent and commonly occurs during or subsequent to boils or other superficial staphylococcic infections.

Brewer[1] concluded from his experiences that during any acute infectious disease microorganisms are excreted through the kidneys by way of the blood stream. In the majority of instances no appreciable damage is done to the renal apparatus. On the other hand, if the number and virulence of the organisms is great, demonstrable lesions will occur. Perhaps subcortical abscess may be formed which break through the capsule, resulting in perirenal infection. It would seem unusual, however, to have a limited portion of the cortex only involved; contrariwise, one would expect to have multiple kidney abscesses, the drainage of the perinephritic abscess having little effect on the permanently damaged kidney. However, the drainage of the hematogenous abscesses usually results in complete cure. It would seem more logical to conclude that the perirenal tissue, which is largely composed of fat, offers a field peculiarly suitable to the growth and propagation of bacteria. The separate blood supply of the perirenal tissues from that of the kidney also tends an anatomic possibility to the supposition.

It has been shown anatomically[2] that there is an intimate communication between the lymphatic system of the perirenal tissues and that of the retroperitoneal areas, and this no doubt accounts for a certain number of perinephritic abscesses, secondary to infection in the lower urinary tract, postpartum infections, periappendiceal infections, etc.

DIAGNOSIS

The previous history may or may not be of considerable value. If the abscess is secondary to a primary kidney disease, one usually obtains the history of frequent urination, burning, pain, hematuria, kidney or ureteric colic, indications of previously existing renal involvement. In the other type there is history of infection elsewhere, the most common being boils, carbuncles, paronychia or superficial wound infections.

The symptoms usually date back from a week to several weeks or even longer. Usually, the first symptom complained of is a dull ache in the affected side which increases in severity and may even simulate renal colic.

On examination tenderness over the region of the costovertebral angle is the most constant finding, generally very acute, though at times elicited only with deep palpation or heavy percussion. When the kidney lies high and the abscess is at or above its superior pole, tenderness may be absent because of protection by the twelfth rib. This is more likely to occur on the left side because of the anatomic relations.

Muscle spasm is one of the earlier findings and should always be looked for. It has the same significance as muscle spasm over an acutely inflamed appendix, or that found by Pottenger's maneuver over an involved lung apex. It is best elicited when the patient is in the sitting posture, the muscles being relaxed by having the trunk supported.

On bimanual examination definite evidence is usually obtained, particularly in thin subjects; early there is an indefinite boggy sensation, while later, with a greater increase in purulent material and edema of the surrounding structures, a definite mass is obtained. This may even be visible when the patient is sitting erect.

As late sequela the abscess may burrow through the diaphragm and produce an empyema or bronchial fistula or travel along the iliopsoas muscles and simulate a psoas abscess. It may point in the lumbar region and rupture spontaneously in neglected cases.

LABORATORY FINDINGS

The most constant of these is a high white count; due to the increase of polymorphonuclear cells, the average in our cases being around nineteen thousand. The urine in cases of primary kidney disease contains the changes of that particular lesion and is not materially altered by the onset of the perinephritic infection. When the source of the infection lies outside of the kidney, the urine may or may not show changes. Generally there is a mild albuminuria with some increase in white blood cells and at times a few red blood cells. This is due to a combination of the accompanying sepsis and local congestion from the infection surrounding the kidney. Also, any severe pyogenic infection makes for a highly acid urine and it has been our experience that, when a urine reaches a pH of 4.4 or lower, red cells are not uncommon. Their presence in limited number must not be given too much significance. Cultures of urine collected under aseptic conditions may show the presence of organisms, generally staphylococci.

The radiogram may be of material aid. The finding of stones in the kidney is suggestive. The demonstration of pyelographic media effusing into the perinephritic tissues, with other symptoms, is diagnostic. With soft plates and the intestines relatively free from gas, an indistinct outline of the iliopsoas margin or haziness of the surrounding tissues on the side in question is very helpful evidence. Enlargement of the kidney outline on the affected side may be noted, especially if an unruptured cortical abscess is present.

OTHER DIAGNOSTIC FINDINGS

(a) The temperature runs a septic course up to 101° and 103°, frequently accompanied by sweating and chills.

(b) Aspiration. While this is usually unnecessary to arrive at a corerct diagnosis, the findings may be so obscure as to necessitate this procedure. A large sized needle and syringe should be used, as the pus may be quite thick and aspirate with difficulty.

(c) Cystoscopic examination. Ockerblad[3] recommends this universally, and cites cases in which data were obtained that differentiated between the necessity of doing a simple drainage or drainage with nephrectomy. Usually one can obtain sufficient information from the history and urinalysis to determine when this should be done. If in doubt, a complete cystoscopic examination should be carried out.

TREATMENT

The only treatment, naturally, is drainage. A short kidney incision which allows free evacuation of the pus with insertion of a large sized rubber drainage tube into the abscess cavity is sufficient. This is followed with daily irrigations of Dakin's solution and the substitution of smaller drainage tubes until the cavity has been obliterated. Exploration of the kidney, when the preoperative findings are not indicative of primary kidney disease, while of interest, is usually not necessary. If the case is seen early and a cortical abscess has formed and not yet ruptured through the capsule, as occurred in one of the cases here reported, exploration will be necessary. When pus in the perirenal tissues is encountered, the insertion of a tube without too much exploration is usually sufficient. Undue exploration opens new avenues of infection and turns what should be a very simple procedure into one of considerable magnitude. Polypragmatic tendencies here, as elsewhere in medicine, are to be avoided.

When there is involvement of the kidney substance necessitating nephrectomy, the question arises whether to do a one or two stage operation. If the patient's condition is such that the risk is justifiable, a primary nephrectomy should be done, as the technical difficulties later are considerably increased by the healing of the inflammatory process about the kidney.

PROGNOSIS

When proper treatment is instituted early, the mortality is practically nil, if there are no complicating features. That is, perinephritic abscess in and of itself is not a serious condition. O'Conor[5] has called attention to the possibility of a chronic cicatrizing perinephritis developing after drainage, both of his cases necessitating decapsulization for relief of symptoms.

REPORT OF CASES

Case 1. American woman of thirty was first seen July 12, 1927, on date of admission to the hospital. She gave a history of having boils over various parts of the body for the past two months. For the past three or four weeks she had had loss of appetite, chills, headache, fever and an indefinite ache in the left side of the back which had increased in severity until on admission the pain was quite severe. There was no history of urinary disturbance.

On examination there was acute tenderness and muscle spasm over the left costovertebral region. The temperature varied from 99° to 102°. The white count was 16,600 with 81 per cent polynuclear cells. The urine was negative.

A left kidney incision was made and a pocket of pus at the upper pole of the kidney was found. Simple drainage was instituted. The patient was discharged from the hospital two weeks later, since which time she has remained well. Culture of the pus showed staphylococcus.

Case 2. Part Hawaiian, male, age 20. First came to the clinic on April 26, 1925, complaining of severe pain in the left kidney region. Gradual onset two weeks previously with increasing severity. No previous attacks. Slight burning on urination. Had several boils on arms several weeks previous to onset which have since healed.

On examination acute tenderness and muscle spasm over the costovertebral region. On bimanual palpation there was a boggy sensation in the region of the left kidney. Temperature 102°, white count 21,400, polynuclear leukocytes 80 per cent. Urine: albumin trace, few white cells, few red cells.

The patient was advised to enter the hospital for operation but failed to do so until May 6, eleven days after initial visit. Temperature on this date was 100.3°, white cells 20,000, polynuclears 86 per cent, urine negative except for a few waxy casts. At operation a pocket of pus containing three or four ounces was found along the posterior border of the kidney. Simple drainage was instituted. Patient left the hospital twenty-seven days after admission and has since remained well. Culture showed pure staphylococcus aureus.

Case 3. Female, age 30. Came to The Clinic on January 29, 1925, because of infected finger.

On February 9 (11th day) the distal phalanx was removed because of osteomyelitis. By February 25 (27th day) the finger had about healed but the patient complained of weakness, loss of appetite, etc. Temperature 100°, white count 11,800, polys 80 per cent. March 5 (35th day) temperature 102°, marked tenderness over the right kidney region on deep percussion. Urine showed trace of albumin, few red cells, few white cells. March 6 (36th day) white count 18,300, polys 78 per cent; March 9 (39th day) white count 21,600, polys 90 per cent, temperature 102.3°.

March 12 (42nd day) under gas anesthesia about eight ounces of thick yellow pus were drained from the left kidney region. Aside from a phelbitis of the left leg which soon cleared up, the patient made an uneventful recovery.

Cultures from this perinephritic abscess yielded a staphylococcus aureus in pure culture, one that was used to make a vaccine to treat the phlebitis and that has been subsequently used as a stock vaccine because of its excellent antigenic properties.

Case 4. Part Hawaiian girl, age 6, came to The Clinic March 26, 1925, complaining of pain in the left kidney region. The onset had been gradual, the mother stating that the child was "run down," no appetite, etc. There was a furunculosis of the scalp which had antedated the present illness. On walking the child abducted the body to the left, due to muscle spasm.

On examination there was marked muscle spasm, tenderness, and doughy sensation in the left costovertebral region. Temperature 101°, white count 17,600, polys 80 per cent. Radiogram of the spine was negative. There was a distinct haziness in the region of the left kidney. March 31, six days after initial visit, temperature 103°, white count 22,400. Urine: albumin negative, few white cells, no red cells.

April 1 at operation about two ounces of thick yellow pus posterior to the kidney were evacuated through a left kidney incision. Culture showed pure staphylococcus aureus. The postoperative course was prolonged, due to the removal of the drainage tube before the abscess cavity had been sufficiently obliterated. The incision had to be reopened on two different occasions and drainage reestablished. She was discharged on July 16, one hundred and seven days after operation, and since has remained well.

Case 5. Portugese, male, age 27. Came to The Clinic July 5, 1924, complaining of steady pain in the epigastric region of one week's duration. For the past several weeks he had had boils on both arms.

On examination there was some tenderness along the right costal margin and lower sternum with muscle spasm. White count 16,400, polys 90 per cent, temperature 101°. Radiogram of the chest showed some elevation of the right diaphragm. July 7 felt better, white count 16,600, polys 60 per cent. July 9, pain more severe, swelling along the right costal margin and epigastrium. Temperature 101°, white count 17,000, polys 89 per cent, hemoglobin 80 per cent, red blood cells, 4,260,000. Urine: albumin trace, few white cells, occasional cast.

July 11, operation. Abscess between liver and diaphragm which had burrowed into the substance of the liver. This cleared up with drainage. Culture, pure staphylococcus aureus. Patient did well until August 4; then began running septic temperature and complained of pain in the left kidney region. On August 14 about one pint of pus was drained through a left kidney incision. He continued to run a septic temperature up to 101° to 102°, and on August 23 began complaining of pain in the right kidney region. The urine contained marked albumin and many white cells in clumps.

On August 26 incision into right perirenal tissue revealed an abscess along the posterior margin of that kidney. After a rather stormy course patient was sufficiently recovered to leave the hospital on October 16, ninety-seven days after primary operation. Numerous boils developed later but gradually cleared up. Aside from having a repair of a ventral hernia which developed in the abdominal incision, the patient has remained well and is able to return to his occupation of driving a heavy truck.

The foregoing cases emphasize the necessity of bearing in mind the relationship between superficial infections of staphylococcus and perinephritic abscess formation. Bilateral perinephritic abscesses are comparatively rare. Hunt[4] emphasizes this by saying, "Bilateral renal infection of metastatic origin, of which Kretschmer reported an instance, proved at operation and necropsy, probably occurs frequently. However, bilateral perinephritic abscess is exceedingly uncommon. In a review of the literature I have found nine cases. A case reported from the Mayo Clinic adds one to this." In the discussion of this paper several more cases were cited, so perhaps the condition is apparently rare only because they have not been reported.

The following two cases represent the difficulty one may encounter in arriving at a correct diagnosis.

Case 6. American, female, age 40. Sustained contusions to the left hand, knee and wrist in an automobile accident on March 22, 1926. On March 25 she began complaining of abdominal discomfort increasing to pain, with chills, fever, sweats and diarrhea.

She entered the hospital on March 31 with a temperature of 104°, pulse 120. Second day temperature 104°, pulse 110, general physical examination negative. Liver and spleen palpable. Right kidney palpable and tender. White count 13,700, polys 82 per cent, red blood cells 4,225,000, hemoglobin 40 per cent. Poikilocytosis, anisocytosis, few nucleated reds. Stool negative for ova or parasites. Widal negative, Wassermann negative, urine negative except for a trace of albumin. Temperature continued up to 101°, white count remained around 13,000, stool cultures negative. Patient felt better but continued septic. On April 17, twenty-seven days after her accident, temperature went up to 102.6°. There was some pain on deep palpation over the right kidney, with a suggestion of a mass of doughy consistency.

On exploration of the right kidney region about 250 c.c. of pus were evacuated. Simple drainage resulted in a gradual subsidence of fever and patient left the hospital April 28, since which time she has remained well.

Case 7. American, male, age 29. First seen February 21, 1926, complaining of headache and general malaise. Temperature 101°, sick for two days. General physical examination negative. Diagnosis at the time was influenza. On March 1 condition continued about the same. White count 15,000, polys 69 per cent, urine negative, stool culture and Widal negative for typhoid and para A and B, Wassermann negative. On March 7 and 15 cultures of stool negative for typhoid .

The patient continued to run a temperature around 102° and 103° and his condition looked very suggestive of typhoid in spite of negative laboratory findings. The general physical examination continued negative. No pain was complained of. March 26, thirty-seventh day of illness, on heavy percussion patient complained of pain over the left costovertebral region. A heavy scar from a previous burn interfered with proper examination. White count 17,600, polys 80 per cent. Radiogram of the spine and kidney region showed a haziness of the iliopsoas and tissues in the region of the left kidney. A large needle was introduced into the left perirenal region and thick yellow pus was withdrawn.

Under nitrous oxide and oxygen anesthesia, in the office, a rubber tube was inserted into the abscess cavity. Smears and special cultures, by the Hahn method, of the pus showed no tubercle bacilli and routine cultures were sterile. The patient gradually gained weight and strength and was able to return to work two months later, since which time he has remained well.

Case 8. Hawaiian woman, age 45. First seen May 17, 1925, complaining of severe pain in the left kidney region. History of several previous attacks. Temperature 101°. Considerable tenderness over left costovertebral angle. Urine at this time was not examined because of menstruation.

Was advised to come to The Clinic for further study, but because of abatement of symptoms and general inertia did not come until two weeks later. At this time temperature 102°, pulse 120. Marked swelling and tenderness left kidney region. White count 21,400, polys 88 per cent. Bladder urine contained albumin 2 plus, white cells 3 plus in clumps, many casts. Cystoscopic examination: Bladder negative except for mild trigonitis. Catheter on right passed up without obstruction; left catheter obstructed near pelvic brim. Radiogram showed a stone on the left near pelvic brim.

A second stone the size of a small hen egg occupied the kidney pelvis.

Pyelogram was attempted but medium could not be introduced past the ureteral stone. One c.c. of phenolphthalein intravenously appeared on the right in four and a half minutes and 16.8 per cent was excreted at the end of fifteen minutes. None appeared on the left side. Urine from the right kidney was normal. The left contained many pus cells and bacteria.

The patient was operated upon the same day and about two liters of pus evacuated from the left kidney region. A sinus tract leading into the kidney substance was noted. As the patient was a poor surgical risk, simple drainage only was done. Two weeks later she left the hospital, refusing any further operative treatment. The sinus had healed by July 20. The patient has not been seen since but relatives state that she has had no further trouble.

Case 9. American, male, age 21. First seen on admission to the hospital on September 17, 1927. He gave the following history. Had been operated on three weeks previously for acute appendicitis, the abdomen being closed without drainage. He left the hospital on the tenth day but returned three days later because of pain in the left kidney region. When seen six days after onset of these symptoms severe pain was complained of in the left lumbar region, especially when being jarred.

On examination there was an appreciable fullness on this side, both on inspection and bimanual examination. There was marked tenderness in the costovertebral angle with muscle spasm and excruciating pain on percussion. Temperature at this time was 102°, white count 20,000 with 75 per cent polys. Radiogram showed an enlarged kidney shadow on the left. Urine examination was negative. Patient had numerous small furuncles scattered over the chest, face and extremities which he said had been prevalent since his earliest recollection.

At operation the perirenal tissues were edematous but contained no pus. The kidney was enlarged, the capsule thickened and was bulging along the center of its convex surface. This was opened and a large solitary abscess found, extending into the kidney substance but not into the pelvis. This was drained through a rubber tube, followed by irrigations of Dakin's solution. The recovery was uneventful and the patient was discharged December 10.

While this, strictly speaking, was not a perinephritic abscess, it was undoubtedly the forerunner of such an occurrence, as no doubt the capsule would have soon ruptured. Just what the source of the kidney infection was in this case is in doubt, whether from the region of the appendix, a slight unnoticed infection in the abdominal wall or from the furuncles. The latter in the light of previous experiences would seem the most logical.

CONCLUSIONS

1. Tenderness over the costovertebral angle, muscle spasm and high white count with high percentage of polys are the most constant findings in perinephritic abscesses.

2. The frequent association with superficial infections is emphasized.

3. A case of bilateral perinephritic abscess is reported.

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INFECTIONS OF THE HAND

TENOSYNOVITIS AND FASCIAL SPACE ABSCESSES*

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Infections of the hand are a very important surgical condition, not only to the man exclusively doing surgery, but to the general practitioner as well, because he is the one who usually sees these cases first and he has to render treatment. Upon the man first seeing these cases is considerable responsibility, because success in treatment depends upon early diagnosis and a knowledge of certain anatomic facts regarding the hand.

When one stops to consider, the hand is really a vital organ, especially to the working man, and the majority of cases are seen in laborers, as their occupation predisposes them to this type of injury and infection. It is appalling when one contemplates the terrific infections with their resulting deformities which may follow in the wake of a small splinter or pin prick. Even though the final disability may not be greatly incapacitating, months may pass before recovery is complete. It is well known that infections in the palm are far more grave than those upon the dorsum of the hand. This is due, of course, to the anatomic differences between the two locations, and it is upon the anatomy of the hand that I wish to spend some time because, if certain fundamental facts are kept in mind, both diagnosis and treatment are relatively simple.

I will not devote any time to infections, such as felons, paronychia, collar button abscesses or lymphangitis, the first three being relatively simple and the last, while it may be very serious, is not per se a medical entity. When hand infections were first investigated, there was considerable controversy as to whether the infection spread by way of the lymphatics or synovial sheaths. I believe it is now generally accepted that, while the lymphatics may play a part, extension is usually by way of synovial sheaths. This brings us to the two types of infection I wish to briefly discuss, namely, tenosynovitis, and the fascial space infections which so frequently follow or are coincident with infections of the tendon sheaths.

The great majority of these infections are due either to the staphylococcus or streptococcus. Nearly all of the low grade type of infections are due to the staphylococcus, while the severe fulminating types if cultured will show practically always the streptococcus. The changes in the tendon sheaths are comparable to a pressure necrosis, due either to the great toxicity of the infection or the great edema which shuts off the blood supply. In acute cases the amount of fluid in the sheath is usually scanty and slightly tinted, while in the more chronic types there is generally a large amount of thick creamy pus. The wall of the infected sheath is congested and edematous, and if the pressure is great, necrosis not only of the sheath but of the tendon itself may take place. Necrosis of the tendon is usually not seen except in the long standing neglected cases. Exceptionally, in cases of extremely long duration and neglect, one will see osseous involvement.

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Since diagnosis and treatment of these conditions are dependent upon a thorough knowledge of the tendon sheaths and fascial spaces, I would like to review briefly the salient anatomic points regarding these structures and their relation to one another. As you know, there are six fascial spaces in the hand of surgical importance, namely the midpalmar, the thenar, the hypothenar and the web spaces, all located in the palm of the hand. Upon the dorsum we have two spaces of minor importance, the dorsal subaponeurotic, and the dorsal subcutaneous.

The midpalmar is a comparatively large free space, extending from the middle metacarpal bone to the radial side of the fifth metacarpal. Dorsally it is bound by a thin sheath over the interosseous muscles, on the palmar side by a thin sheath of tissue, the flexor tendons, and the dense tissue of the palm. It is limited on the ulnar and radial sides by a dense fibrous septum. We may note that fluid injected into this space will pass under the anterior annular ligament into the forearm, but will not pass into the thenar or hypothenar spaces.

On the radial side of the hand is the thenar space, a relatively large space lying on the palmar side of the adductor transversus, extending from the middle metacarpal bone to the radial side of the hand. In cross section it is L-shaped, and is attached firmly to the palmar surface of the bones. This attachment is very important, as it prevents extension into the dorsum of the hand. On its palmar side it is bounded by a dense layer of tissue, blending into the dense tissue of the palm. The tendon of the lumbrical muscle of the index finger enters this space. We note also that the tendon of the flexor pollicis longus is separated from this space by considerable dense tissue (figs. 1 and 2).

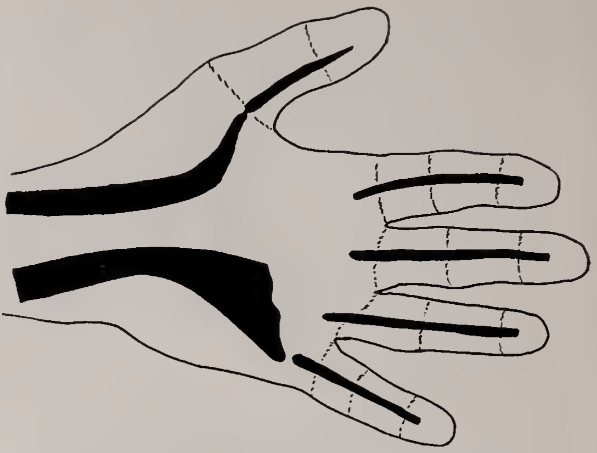

Fig. 1. Diagram showing location of the various tendon sheaths and the ulnar and radial bursa. Note that the sheath of the little finger does not communicate with the ulnar bursa, nor do the ulnar and radial bursae communicate. This relation of the sheaths and bursae is seen in approximately fifty per cent of the cases. (After Kanavel.)

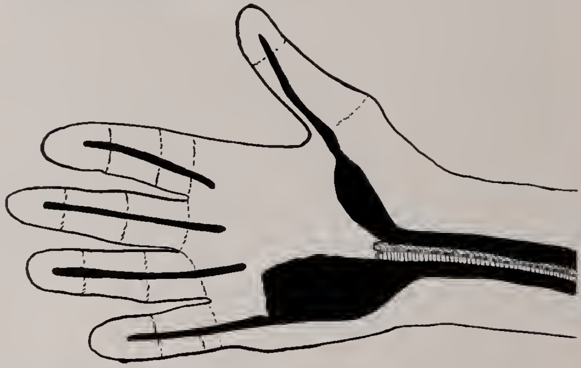

Fig. 2. Diagram showing how the sheath of the little finger is continuous with the ulnar bursa, which takes place in about fifty per cent of the cases. Showing also the connection between the radial and ulnar bursa by means of the intermediary sheaths, also seen in approximately fifty per cent of the cases. (After Kanavel.)

The relation of the midpalmar and thenar spaces is of considerable importance to the surgeon. They are separated at the middle metacarpal bone by a firm septum, do not communicate, and neither overlaps the other side of the bone. The tendons of the third and fourth fingers, with their lumbrical muscles, are separated from the midpalmar space by only a thin membrane, and pus from these tendons must pass into the midpalmar space.

The lumbrical muscle and tendon of the index finger occupy the same relation to the thenar space. Its floor is more complex than that of the midpalmar space, as the muscles here are more confusing. For the most part it consists of the adductor transversus and oblique. If tension was great in this space, the pus would come to lie on the dorsal surface of the adductor transversus and against the first dorsal interosseous, and may finally spread to the subcutaneous tissues of the web.

There are two spaces on the back of the hand which only need to be mentioned in this discussion. The dorsal subcutaneous space is an extensive area of loose tissue, between the skin and the extensor tendons. The dorsal subaponeurotic space lies between the metacarpals and the aponeurosis of the extensor tendons. The web spaces are areas of loose connective tissue between the fingers, with prolongations distally along the sides of the fingers, and proximally into the subcutaneous tissue of the dorsum and into the connective tissue of the palm around the lumbrical muscles (figs. 1 and 2).

From a surgical standpoint the flexor tendons are the most important, and only they will be considered here. The sheaths of the index, middle and ring fingers begin just distal to the distal interphalangeal joint, and extend into the palm a thumb's breadth proximal to the web into the loose palmar tissue. The sheath of the index finger is in relation to the thenar space, while the sheaths of the middle and ring fingers are in relation to the midpalmar space, but the middle finger sheath may very occasionally be in relation to the thenar space by means of the lumbrical space between the middle and index fingers.

The sheath of the flexor pollicis longus is important because it nearly always communicates with the enlarged sac of the tendon sheath at the wrist, known as the radial bursa. This extends to about an inch proximal to the anterior annular ligament. It lies superficial to the proximal end of the thenar space, and extension rarely takes place from one to the other. The tendon sheath of the tendon of the little finger communicates with the ulnar bursa in about fifty per cent of the cases. The sheaths may be in relation occasionally with the midpalmar space, as may be the lumbrical canal on the radial side. The ulnar bursa spreads out over the fourth and fifth metacarpals, and extends about one inch above the anterior annular ligament and lies superficial to the pronator quadratus.

The relation between the synovial sheaths and fascial spaces are most important, since if they are known one may prognosticate or diagnose extension of infection from any given point. Kanavel has shown by injection methods on a large number of hands that the relations are quite definite. These relationships are most important from a clinical standpoint, as they not only determine the points for incision in a given case, but also indicate where secondary abscesses may form. They also show the relationship between tendon sheath infections and fascial space abscesses.

The results of these experimental injections are in brief as follows: Injections made into the sheaths of the middle and ring fingers passed in the great majority of instances into the midpalmar space. This space may also be reached from the little finger sheath in those cases, where it is not continuous with the ulnar bursa. Injections made into the sheath of the index finger passed into the thenar space in all cases. Injections into the sheath of the flexor pollicis longus will not as expected pass into the thenar space, when the sheath is tied off from the radial bursa, but into indefinite spaces over the first metacarpal bone. Ordinarily injections into this sheath will pass up the radial bursa and into the forearm. Injections into the ulnar bursa will pass into the forearm and also come to lie over the pronator quadratus and beneath the deep flexor. Injections into the midpalmar space, if made under considerable pressure, will pass into the forearm, while injections into the thenar space will remain localized in that compartment.

It makes no difference whether pus spreads from the radial or ulnar bursa, or the midpalmar space, the same portion of the forearm is involved, the pus lying between the pronator quadratus and the deep flexor. About three inches up the arm it will begin to invade the intermuscular septa. Thus we see that the sources of involvement of the fascial spaces are usually as follows: The midpalmar space may be secondarily involved from the middle, ring and little fingers. The thenar space is usually involved from the tendon sheath of the index finger and very occasionally from that of the middle finger by way of the lumbrical sheath. These spaces may also become infected by direct inoculation or secondarily to compound fractures, etc.

The symptoms and signs of acute tenosynovitis are briefly as follows: The diagnosis of the onset is one of the most difficult problems in surgery according to Kanavel, and every suspected case should have a thorough and painstaking examination. The three cardinal symptoms of tendon sheath involvement are (1) excessive tenderness over the course of the sheaths, this being the most important single sign; (2) the finger is held in the position of flexion, and this flexion is quite rigid; (3) excruciating pain on passive extension, which is most marked at the proximal end of the sheath. A marked edema is usually present over the dorsum of the hand, due to the loose tissues here.

But one should not be misled into thinking the pus is located here, as is so often done, and useless incisions made over the dorsum of the hand. There are also present in varying degrees systemic symptoms of infection, as malaise, slight chills and more or less elevation of temperature. The pain grows less severe as the edema develops, which should not mislead one into a false sense of security and the assumption that the infection is subsiding.

Let us go over briefly the signs and symptoms of extension from an infection in the various tendon sheaths, beginning with that in the sheath of the little finger. Extension may take place to one of the following sites, enumerated in the order of frequency: (1) the ulnar bursa, from here to (2) the radial bursa, or (3) into the forearm. In late cases the infection may pass to the midpalmar space and we may have even later osseous involvement.

Involvement of the ulnar bursa is shown by great edema, especially on the dorsum, fullness in the palm, but the normal palmar concavity is still present. Exquisite tenderness is noted over the area involved and the wrist becomes fixed. The thumb may become sensitive, due either to its close position or to actual extension.

Extension to the radial bursa is shown by increased swelling and tenderness in the thenar emminence and along the sheath of the flexor pollicis longus. Extension to the forearm is due to rupture from the proximal end of the bursa, the pus passing between the pronator quadratus and the flexor profundus. At the middle of the forearm it passes more superficially, and toward the ulnar side along the artery and nerve.

Involvement of the forearm is characterized by a brawny induration of the tissues. Later in the course of the infection the pus may accumulate subcutaneously in the region of the wrist and beneath the tendons it may be missed. Extension to the lumbrical space should be watched for, as the adjacent finger and midpalmar space may become involved.

In lumbrical space involvement we note swelling over the sheath, and the web of the finger is also swollen and reddened. In involvement of the midpalmar space we see the normal concavity of the palm replaced by a definite bulging, and definite tenderness over the area of the space. In extensions from the index, middle and ring fingers the most common extension is to the lumbrical sheath, and from here to the midpalmar space or the adjacent tendon. The middle and ring finger sheaths, as we have seen, are in relation with the midpalmar space, and the index finger with the thenar space. Hence the midpalmar space may easily become involved in infections of the ring and middle fingers, and the thenar space secondarily involved from infection in the index finger. Infection beginning in the radial bursa or the sheath of the flexor pollicis longus may extend to the ulnar bursa, as Forsell's statistics show that this occurred in twenty-three out of twenty-seven cases. It may extend from the radial bursa into the forearm, as shown by swelling above the anterior annular ligament.

The symptoms and signs of fascial space involvment are briefly as follows: Abscesses in the spaces may occur simultaneously with tendon sheath involvement, sometimes later after tendon sheath infection, or may occur independently of the tendon sheaths by direct inoculation. Pain is present and limited to the area involved, but not so sharply localized as in tenosynivitis. After several days pain and tenderness grow less, due to the pressure on the nerves. One may often be aided in the diagnosis of fascial space involvement by a known previous tendon sheath infection.

In midpalmar involvement one sees obliteration of the normal palmar concavity, and in its place an actual bulging. Edema will never produce such a definite bulging. In thenar space involvement we get a bulging from the adduction crease of the thumb, and this is held as far as possible from the hand. Extension from the thenar to the midpalmar space is not at all common. Extension up into the forearm is very rare, it being practically always from the ulnar or radial bursa.

Treatment of acute suppurative tenosynovitis. Various procedures have been advocated in the past, as for example, Bier of Berlin has been a strong advocate of passive hyperemia in these cases, and Klapp has advised the use of suction cups combined with conservative incisions.

Here the surgical treatment of these conditions, as laid down by Kanavel, only will be given. The spread of a finger infection to the tendon sheaths may be prevented in many cases by rest in bed, elevation of the hand which tends to give more comfort, the application of hot moist dressings and a high fluid intake. In the treatment after a definite diagnosis has been made two points should be emphasized. (1) Operation should be performed under general anesthesia, and (2) in a bloodless field (fig. 3).

In infections of the index, middle and ring finger sheaths the incision may be made at the side rather than over the flexor surface, as a scar on the palmar surface should be avoided if possible. The part over the articulation should be left uncut to pre-

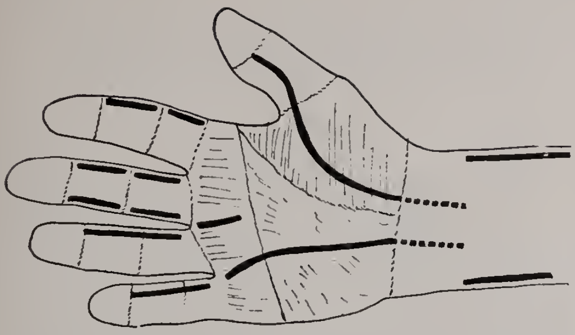

Fig. 3. Diagram showing sites of the various incisions made for infection of the tendon sheaths, and their possible extension into the forearm; also incision for draining the midpalmar space. Incision for draining thenar space is best made on dorsum of web, as has been pointed out. (After Kanavel.)

vent prolapse of the tendon, and also it is not necessary to incise over the distal phalanx. If one desires, he may make an incision on the opposite side of the finger, and the two incisions connected, thus securing better drainage. If the swelling is great, one long incision may be used to prevent closure of the wound.

If the infection spreads into the thenar space, the incision may be carried back along the metacarpal bone, along the dorsum of the web, and the thenar space drained without incision on the palm by the insertion of a hemostat over the metacarpal. One should be careful not to thrust the forceps beyond the middle metacarpal, and thus carry the infection into the midpalmar space. When extension takes place into the lumbrical space it should be immediately opened. If the web is involved, it may be split entirely through without any interference with later function (fig. 3).

In infections of the little finger sheath and ulnar bursa one should remember the following points. The sheath of the little finger and the ulnar bursa are separated in about fifty per cent of cases; therefore, the ulnar bursa should not be opened unless one is sure that the infection has invaded it. The first incision should be made over the middle and proximal phalanges, and if pus is present in the ulnar bursa, pressure over this area will cause it to flow out at the site of the incision. If pus is present in the bursa, a grooved director may be inserted and the incision carried up to the anterior annular ligament. It is only in rare instances that it is necessary to sever this ligament. If the pus invades the forearm from the radial or ulnar bursa, it comes to lie, as stated before, between the flexor profundus and pronator quadratus muscles.

Drainage of the forearm is best instituted as follows: At a point about one inch above the tip of the ulna an incision is made, and carried down to the flexor surface of the ulna. An artery forceps is now passed through the incision to the skin of the opposite side, and incision made here, and the forceps pushed on through, thus giving through and through drainage. The incisions should be about an inch and a half long, and great care should be taken to avoid injury of the radial and ulnar arteries. From these incisions pus may be drained from the forearm, or the upper end of the radial and ulnar bursa may be opened and drained.

One should not stop after making the incision, but the flexor profundus should be raised, as the pus always lies between it and the pronator quadratus and interosseous membrane. There is no need to insert drains, if the incisions are wide enough. Should the pus have invaded the greater part of the forearm, the incision may be extended several inches on the ulnar side, and the muscles and tendons spread widely apart.

In infection of the flexor pollicis longus sheath, one may dissect down to the sheath over the proximal phalanx, and then carry the incision to within an inch of the anterior annular ligament, keeping well to the palm to avoid injury to the motor nerve of the thenar muscles. The radial bursa may also be drained from its upper end, as noted above, by an incision in the forearm.

Treatment of the fascial space abscesses is wide open incision over the site of the pus. The thenar space is best opened by making an incision over the dorsum of the web, and through this opening thrusting an artery forcep into the space, always being careful not to push the forceps across the midpalmar space. This space may be drained by a palmar incision between the third and fourth metacarpal bones. Beginning just proximal to the web, the incision is carried proximally about an inch, and the space opened by thrusting in an artery forceps and spreading it wide. An abscess in the hypothenar space may be adequately drained by simple incision about an inch long over the site of the pus. In draining the web spaces, the web may be split entirely through without fear of any later impairment of function.

A few points concerning general treatment should be mentioned for the sake of completeness, remembering, however, that wide open incision and drainage are the prime factors. Rubber tubes are dangerous to use, as they may cause pressure necrosis, and gauze drains soon act as a plug. However, vaselined gauze may be used for a short time.

The affected part should be elevated, and moist hot dressings applied for a few days, after which dry dressings should be used. Moist dressings used for too long macerate the tissues and cause excessive granulations. Strong antiseptic solutions should not be used. The wound should be dressed twice daily and gently irrigated with normal saline solution. The hand is best kept on a dorsal splint with the fingers in extension, to prevent prolapse of the tendons and a flexion deformity.

The big problem after drainage is instituted is prevention of the formation of adhesions. Passive and active movements should be started within a few days, making all passive movements in sterile hot water. All movements should be performed gently and intelligently. Later, various types of physiotherapy may be used in an endeavor to restore as nearly normal function as is possible.

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Filtrable Elements of Tuberculosis Virus (Tuberculous Ultravirus). Numerous researches in the last few years have confirmed the hypothesis put forward by Fontes in 1910 regarding the filtrability of the tuberculosis virus, and have revealed the existence in cultures of the tubercle bacillus, as well as in tuberculin lesions, of certain elements which can pass through porous porcelain filters and produce in guinea-pigs lesions of a special type, as is evidenced by the fact that guinea-pigs inoculated with tuberculous filtrates never show (even after a survival of from six to eight months) an inoculation chancre with its satellite caseous adenitis, or the nodular visceral lesions which are generally obtained through the inoculation of tuberculous products. A. Calmette, J. Valtis and A. Saenz, Paris (*Journal A. M. A.*, June 22, 1929), assert that on the other hand, the glands in the vicinity of the point of inoculation become slightly swollen from the tenth to the fifteenth day and subsequently become normal again. Autopsies of animals having died from an intercurrent disease, or as the result of an emaciation syndrome, do not show any caseous glandular lesion. The entire lymphatic system, and especially the tracheobronchial glands, are slightly swollen. These glands are hard and sometimes contain liquid pus composed of polymorphonuclear leukocytes. It is possible to detect typical acid-fast bacilli on smears made from these glands after exhaustive examinations which require sometimes five or six hours. These bacilli are either isolated or, more frequently, grouped in masses containing numerous elements in the middle of an amorphous mass which can be colored with methylene blue (methylthionine chloride-U. S. P.). They are more easily found during the first two weeks and first two months after inoculation. After this delay they are likely to disappear. Sometimes the infection produced by the inoculation of tuberculous filtrates is manifested solely by the temporary appearance of tuberculinic allergy. In such cases a temporary infection is produced which ceases with the destruction in the organism of the filtrable virus, this being the so-called labile virus of Arloing and Dufourt. Finally, in exceptional cases, after the inoculation of tuberculous filtrates, one may find discrete nodular lesions limited to a single organ (lung or spleen), but here again there is no trace of any inoculation chancre or of the customary satellite adenitis. These atypical forms of tuberculous infection in guinea-pigs, resulting from inoculations of tuberculous filtrates are due to modifications in the virulence of acid-fast germs development from filtrable elements of the tubercle bacillus.

VENTRICULAR DRAINAGE PRELIMINARY TO CEREBELLAR EXPLORATORY OPERATIONS

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Prior to Cushing's inauguration of the procedure for tapping the cerebral ventricles during cerebellar decompression for neoplasm, the mortality rate was exceedingly high. Most of these operations were doomed to failure and very few patients, suffering from cerebellar tumor, survived. Cushing was the first to advocate and to put into operation a method for tapping the cerebral ventricles before opening the dura. Since this has been in general use the mortality rate for cerebellar tumor operations has been on the decline, yet we experience a relatively higher rate today, even with this technical advantage, as compared with other intracranial lesions.

It occurred to the author that if we could by any means overcome the shock attendant to the sudden release of cerebrospinal fluid when the cerebral ventricles are tapped at the time of exploration, we might in a measure produce less shock. Having observed the sudden release of cerebrospinal fluid from an enormous internal hydrocephalus and the pressure cones in cerebellar tumors, it was decided to use some method to gradually release the fluid whereby the medullary mechanism might be given an opportunity to slowly readjust to the change in intracranial pressure, following the release of the hydrocephalus.

It is certain that a long standing internal hydrocephalus in tumor cases exerts considerable pressure upon the impinged cerebellar tonsils, medulla and pons. If we suddenly release this pressure by removing the cerebrospinal fluid, we surely invite medullary disaster. Many of us have witnessed, all too frequently, the change in respiration and circulation when the ventricle is tapped. This is undoubtedly a medullary vasovagal embarrassment.

By suddenly releasing a long standing intracranial pressure we fail to give the medullary mechanism sufficient time to readjust to the changed conditions of pressure. It is well known that the sudden release of large quantities of fluid from the chest or peritoneal cavity will produce more or less shock and collapse. If we usher in collapse in such cases by sudden withdrawal of fluid in cavities remote from the intracranium, it is not improbable that in dealing with such delicate mechanism as respiration and circulation we are courting trouble.

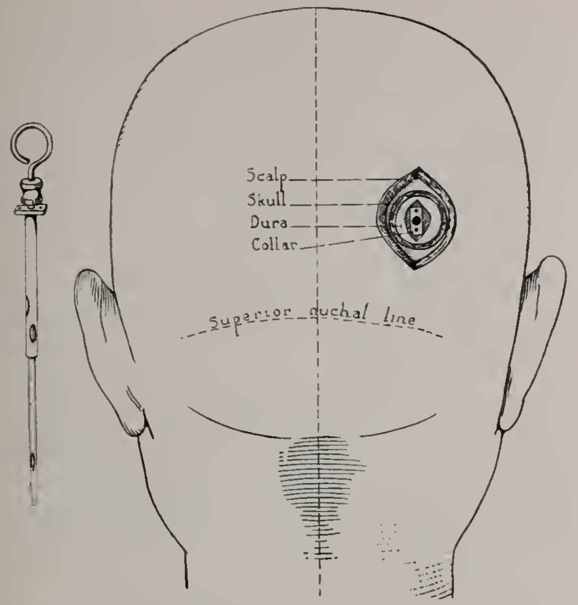

Diagram showing collar in ventricle.

This operation has as its objective the short circuiting of the ventricular fluid around the constricted brain stem, aqueduct and compressed medulla and pons. By draining the ventricles through a fixed tube into the subaponeurotic layers of the scalp and dressings for twenty-four hours, we endeavor to give the medullary mechanism a chance to gradually readjust and thereby avoid the sudden respiratory and circulatory changes which inevitably occur at the time of the major procedure. In substance, what is done is a ventricular tap twenty-four hours before the decompression and exploration.

Briefly, the entire head is shaved to prevent the possibility of infection. The posterior half of the scalp is prepared thoroughly with soap and water three times, vigorously rubbing with sterile gauze sponges and green soap, removing all soap each time. Three applications of alcohol are then applied and two paintings with mercurochrome (5 per cent acetone). An incision three inches long is then marked out over the occipital region as for the ordinary ventricular puncture; either right or left is selected as circumstances may warrant. Light drapes are applied, fastened in place with skin clips and incision made down to the periosteum. Bleeding controlled with six Andrew Crawford clips, three on each side, doing away with the necessity for hemostats. Periosteum is incised and opening made with a perforator and enlarged with a burr. Dura is opened by a small criss-cross incision just sufficiently large to admit the needle and not large enough to allow the flange of the collar to slide under the dura. A ventricular needle, carrying a silver collar, is then inserted through the crest of a convolution. After entering the ventricle, the fluid is allowed to gradually escape.

The silver collar is then carried into the ventricle along the track of the needle and the latter withdrawn. Four linen sutures, through and through, are then placed; mercurochrome is applied to the skin and extra heavy dressings to absorb the cerebrospinal fluid which will escape through the collar.

In those cases in which we have used this method twenty-four hours before the cerebellar exploration, we have found a noticeable reduction in pressure in the posterior fossa. There have been no cases of respiratory or cardiac disturbance at the time of the exploration. The danger of infection is remote, if we carefully prepare the field of operation. It can be performed under local anesthetic in adults but in children it is preferable to use a light ether narcosis.

The silver collar used in this operation is the same type as used by Naffziger and Fleming in the drainage of brain abscesses and also used by them during the course of a cerebellar exploration but placed in situs at the time of operation.

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Acute Arsenic Poisoning. The apparent lack of general recognition that hair is an important channel for the excretion of arsenic, and the paucity of data in the literature on the arsenic content of hair in cases of poisoning, prompted Theodore L. Althausen and Lewis Gunther, San Francisco (*Journal A. M. A.*, June 15, 1929), to make an investigation of this subject when an outbreak of arsenical poisoning occurred on a farm in Sonoma County, California. The outbreak of acute arsenical poisoning was traced with great probability to a container of rat exterminator in the farm cupboard. No fatalities occurred, but of seven persons originally affected five developed varying degrees of peripheral neuritis from the third to the sixth week, and one of the two remaining individuals developed laryngitis. A detailed hospital record was obtained in the most severe case, with quantitative data on the arsenic found in the hair, urine and feces before and after sodium thiosulphate administration. The outstanding facts in the literature on deposition of arsenic in the hair which attract attention to this structure are, first, that arsenic is found in the hair after single or repeated doses of it but does not appear there for at least many hours after it is found in abundance in the internal organs. At the earliest, it has been demonstrated in the hair five days after poisoning occurred. Second, the hair content of arsenic per unit of weight surpasses that of all other tissues and bodily excreta in subacute and chronic cases of poisoning with this metal, and even in cases of acute poisoning the liver is the only organ that occasionally shows a greater amount of arsenic than is contained in the hair in subacute and chronic cases. Third, hair is found to contain arsenic much longer than any other structure of the body, including the liver and the skeleton. This phenomenon is accounted for by continuous deposition of arsenic in the hair from all over the body. The evidence here adduced shows that arsenic occurs in the hair in a fixed state and is not reabsorbed for excretion through other channels.

THE PROPER CLOTHING AND SHOES FOR THE GROWING CHILD *

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The selection of the proper clothing and shoes for the growing child is just as important and essential for the pediatrician or the mother as the selection of food, hours of sleep, recreation and general habits. The primary purpose of clothes is to maintain the body temperature at a constant degree, also to protect it from the heat, cold, sunlight, rain, mechanical injuries, dirt and insects. Often it serves the purpose of indicating the social scale of the individual, and many seem to regard the function of clothing solely as that of ornamentation.

Years ago the young woman was married and lived in the same town, city or community where she was close to mother, the old family physician or nurse. When she became an expectant mother, she knew where to go for advice and help. She worried very little about the proper clothing or care of her baby, for every detail was taken care of by someone of long experience.

Of more recent years she gets married, leaves her home, mother, the old family physician and nurse, and journeys far away to some distant point to make her home. When she becomes an expectant mother, she soon realizes that she is a stranger in a strange land, comparatively speaking. The average bride of today is far more capable in discriminating the fine points of an automobile, silverware, handsome rugs or fine china than the knowledge of her own welfare, pregnancy and child. She is forced to seek advice from a specialist, the obstetrician. The chief aim of the obstetrician is to carry her through her pregnancy and successfully confine her, giving her a living child. His work ends there as far as the welfare of the child is concerned.

CLOTHING

The expectant mother goes to the department store to buy her outfit and baby clothes. There, in very many cases, she is forced to buy from some inexperienced clerk in her 'teens, whose chief training is to make a sale as well as to feature certain garments and clothes which the buyer or manager feels they have overstocked and must unload at any price or hazard. The baby is dressed in such clothes as the young clerk tells the mother are the latest and most stylish that can be bought.

It is not very long until this same mother has to have a doctor for her child, so she selects another specialist, the pediatrician. Is she disappointed in him or is it that he is too scientific in his work with her child, too busy or disinterested in such things that might as well be handled by the nurse maid or incompetent clerk?

Not long ago a young mother said to me, "I hope you won't be too impatient with me, if I seem to ask you some simple or silly questions. I am a long ways from my mother, know but few people here and do not know anyone else of whom I can ask such questions." Why shouldn't we answer such questions as these? I keep a basket of clothes and one of shoes in my office just for that purpose, and either my nurse or myself will advise the mother as to the proper clothing and shoes she should buy.

The climate in which one lives plays quite an important part in the selection of these articles. The dry, cold climate naturally would require more and better woolen clothing than that with a great deal of rain and moisture with sudden changes but at no time severe cold. Contrary to the popular belief, cotton, weight for weight, appears to be warmer than wool. Silk is only slightly less warm than wool. As an absorbent, wool appears to be an unsuitable material, since it is wet with difficulty and tends to keep unabsorbed perspiration for a long time in contact with the skin. This is probably the reason, or one of the reasons, why wool is uncomfortable and causes itching.

More important than the discomfort is the likelihood that the failure of wool to absorb moisture tends to cause slight maceration of the skin and increases the chances of infection. These chances are much increased by the fact that wool must be washed only in lukewarm water with the least manipulation, as it shrinks and deteriorates. On the other hand, cotton can be thoroughly washed and even boiled without undergoing rapid damage. Wool is more irritating to the skin than the other fibers. Therefore, all-woolen underwear is not the best for our mild Northwest climate.

The undernourished children and the convalescing require more covering than the normally nourished and well. Children should be clothed lighter indoors as the average home is steam or furnace heated and kept at a temperature of seventy degrees or more. When they go outside they should put on extra wraps and take them off when returning to the house.

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*Read before King County Medical Society, Seattle, Wash., ———, 1929.

Great care should be taken not to overdress them, causing undue perspiration which results in their taking cold at the slightest exposure. Knitted fabrics, owing to their light weight, such as the sweater, is a much more useful garment for active children than overcoats or heavy knitted jackets. The clothing of all children should be simple, loose and light in weight, so that no pressure is exerted on chest or abdomen and should afford perfect freedom to every part of the body, so that all forms of wholesome play may be enjoyed without discomfort.

During the cold winter and the cool spring weather, every part of the body from the neck downward should be warmly clad and the clothing so distributed that all parts are equally protected. It is a serious mistake to think that the trunk alone needs protection, and that no harm can result from imperfectly clad limbs. An experiment by Variot and Lavialle showed that, by exposing the legs and thighs of normal infants to the air at ten degees C., there was an increased radiation and conduction of one hundred sixty calories, the amount contained in two hundred twenty-five grams of milk. Exposing the arms alone made a difference of forty calories. The habit of permitting young children to wear short socks during the winter months or even cool spring months breaks all the ordinary rules of health.

The mother who will wear a sweater indoors all day and heavy furs at night will insist upon turning her children out in to the wintry air, lightly clad with short socks, leaving their legs bare to the frost and fog, all because of the impression that she is "hardening" them. This question has been tested and it is clearly shown that children exposed in this manner are not toughened but actually weakened, and their resistance is so lowered that they are more susceptible to colds, sore throats, earaches or other ear troubles than their properly clothed playmates. The area of a child's two legs from above knee to ankle is about the same as that of his chest, and he can lose heat rapidly enough from exposed legs to counterbalance that saved by extra layers of clothing elsewhere.

Some children make up for this unnecessary loss by eating more and playing more violently. Some of them make it up by shivering. The malnourished and undernourished grow still thinner. There may be one child out of every five that breaks all the laws of health and still nothing apparently happens to him. It is the benefit of the other four that should concern us and who need our help and advice the most.

Faber makes the statement that he doubts very much that short socks or stockings are advisable unless the outer temperature exceeds eighty degrees. It is the young baby and even the child that cannot talk and explain its feelings that suffer most the ill effects of improper or too little clothing. If the baby's hands and feet are cold or he looks pinched and blue about the lips, he needs warmer clothing. If he continually perspires and his body is moist to the touch, he has too much on. Again, overdressed babies are likely to be restless and fretful.

A good index as to whether a child is sufficiently clothed is the condition of his lower extremities. The forearms and hands cannot be relied upon. The legs and feet of every child should always be warm to the touch. No two children will react at all times in exactly the same way; neither can every child be clothed in the same way and expect the same results.

What should be the criterion of sensible clothing? Comfort is perhaps the best. Some mothers will clothe their children most uncomfortably in their efforts to avoid certain dangers, largely imaginary. The average child should have no clothing that cannot be washed or properly sterilized by boiling.

All tight fitting belts, bands, circular elastic garters, shirts and stockings which have been allowed to shrink and bind the shoulders and ankles, impair the circulation and nerve supply to those parts where worn. How often you find the young school boy with his belt strap cinched so tightly that it may eventually do harm.

Underwear of loosely knitted weave is warmer for the same weight and thickness and material than is that of densely woven fabric. Underwear and other garments when loose fitting are warmer than the same garments when they cling to the body because the loose fitting garment encloses more warm air than do the tight fitting clothing for the baby.

Abdominal bands should be made of material that gives and conforms to the abdomen in whatever position the child may be. Flannel cut on the bias or unhemmed strips of part wool flannel or some knitted silk and wool or cotton, six to eight inches wide and eighteen to twenty inches long, should be wrapped about the abdomen next to the skin. The function of the band is to hold the navel dressing in place and give warmth to the abdomen. Whatever sort of band is used it should never bind. A band drawn tightly about the abdomen may cause vomiting, constipation, abdominal or inguinal hernia and do harm, if the pressure is in the wrong place.

As soon as the navel has healed I see no reason why the abdominal band cannot be replaced by the circular band with straps over the shoulders and pinned to the diaper. Silk and wool, linen mesh or cotton material are the most preferable.

The diaper. Great care should be exercised in selecting the proper diaper material as nothing can be so irritating or cause so much discomfort as scalded or raw buttocks. The ideal diaper fabric should be highly absorbent as well as porous enough to permit fairly rapid evaporation and aeration of the garment. The dense cotton flannel or daisy cloth so much used absorbs a large amount of moisture, but is not sufficiently porous to provide evaporation. When such diapers are used and are not changed very promptly, the skin is subjected to a steaming which is a frequent cause of scalded buttocks. The birdseye cotton diapering is perhaps the best diaper material because it is highly absorbent and porous, Next, the linen diaper cloth or cotton stockinet.

Small diaper squares may be placed within the outside diaper in such a position as to receive the urine and feces. This lessens the thickness and heating of the buttocks. A rubber covering or water-proof diaper should be used only for a short time. Water-proof diapers are especially dangerous to girl babies.

No diaper should be used again until washed. The square or long way of applying the diaper has many advantages over the old triangular method because it allows more freedom of the limbs, a greater area for absorption and is less heating.

Shirts. It is well to begin with the second size, as the first is soon outgrown. They should open all the way down the front, long sleeves and extend below the band. All-wool shirts are not practical for two reasons; one, so many children cannot tolerate wool; next, they shrink so much that soon they become tight and limit motion about the shoulders.

Silk and wool, all silk, linen mesh or cotton garments may be used. During the summer weather it may be entirely of cotton.

Petticoat. A sleeveless petticoat should be made of white flannel throughout, in one piece from neck to hem, fastened over shoulders, extending from six to ten inches below the feet. During the summer it may consist of a flannel skirt attached to a loose cambric waist. If very warm, no petticoat is necessary. A second petticoat of some light material is often worn over the first to prevent the flannel showing through, but this is unnecessary. The old fashioned pinning blanket is to be condemned.

Stockings should be of cotton, silk or silk and wool and used for dress out of doors but not to sleep in at night.

A slip or dress is made of nainsook or lawn, loose with long sleeves, opening at the back and of the same length or a trifle longer than the petticoat. No trimmings which can scratch or irritate the skin of the baby's neck should be used and these garments should not be starched.

Beside the garments described above, the child should have a shawl or a shoulder blanket of flannel to be used as a protection when taken out of the room. A thin knitted worsted sack is useful, if the room happens to be cooler than usual. A flannelette wrapper to be put on before the bath. For use out of doors, a cloak and warm hood.

Night clothing. A roomy night gown is best made of stockinet material, although part wool or cotton flannel is commonly used. The fuzzy surface of cotton flannel is very inflammable and care must be taken to guard against fire.

Sleeping bags. After five or six months of age a sleeping bag made of stockinet, outing flannel or any woolen material is a great aid, not only to the mother but a protection to the baby, as he can never uncover himself, and will save many a child from taking cold. This is very useful for the baby who sleeps outside daytime or on the sleeping porch at night.

Clothing of childhood. When the diaper can be dispensed with, the clothes of childhood replace those of infancy. The clothing consists of the following articles: (1) An undershirt, long sleeved and high necked, or material mentioned above and of thickness and weight varying with time of year, but never too heavy; (2) drawers for winter, close fitting, cotton, silk and wool, or cotton and wool, stockinet, or merino; looser and of muslin for hot weather; (3) stockings long at all seasons in the Northwest unless temperature is above eighty; (4) a white muslin skirt with a waist; (5) a loose, high necked, sleeveless waist provided with buttons to which the stocking supporters and drawers can be attached; (6) a flannel skirt with muslin waist, to be worn in winter; (7) a dress or rompers which we will leave to the mother or dressmaker.

Night clothes. The material may be cotton flannel or stockinet for winter and muslin for summer. In case of a restless child the closed feet sleeping garments can be used which is a protection from taking cold. Denton sleeping garments are too heavy for the average child, causing them to perspire or become restless sleepers. Pajamas also may be worn by either sex.

Children may go bareheaded a greater part of the year, but in summer a simple light weight straw or cloth hat is necessary to protect the head and face when the sun is very hot.

SHOES

The selection of shoes is just as important as the dress. I cannot begin to tell what a great handicap "flat foot" imposes upon the human race.

Proper shoes. There are very few people today who have normal feet, and a great many who have abnormal foot conditions which have become sufficiently serious that they are not able to do the kind and amount of work on their feet that healthy and normal persons should be able to do. The records of the examining board for the United States Army during 1917 and 1918 showed that about one-fifth of all the young men examined had crippled, painful or partially disabled feet, and all these had to be rejected or accepted for a grade of service below class A. Many of the men accepted for military service broke down in training in this country or upon being required to march, carrying equipment in France.

By observing the form and use of the feet in small children or those people who have used their feet without the interference of shoes, we can see that the foot of the average person in this country has been damaged by modern or fancy shoes, improper or poorly fitted shoes. Most people have feet which are not the shape they were originally intended to be. Some of these changes are so marked that they can be called shoe-deformities, especially so of the toes and sometimes of the arches of the foot.

The relief and cure of painful conditions of the feet cannot be brought about by going back to sensible and proper fitting shoes. Corrective methods must first be used, then proper shoes worn to prevent a return of the trouble. The best way after all is to prevent such troubles by developing strong feet and wearing correct and proper fitting shoes from the beginning.

Even in infancy we have certain foot conditions that must be recognized and carefully treated, if we expect them to develop strong, useful and comfortable feet and legs. Much more attention should be given to these problems than usually is, and we should not dismiss these patients to the uninformed shoe salesman or badly informed chiropodist. Considering how many apply to the members of our profession for early relief we should take an interest, inform ourselves and make it a part of our professional advice just as much as the proper medicines, habits and modes of living.

Shoes are more than an ornamental adjunct to modern dress. They shield the feet while walking from injury and bruising, furnish protection against the weather and climatic changes, and have a hygienic value in keeping the feet clean. One should have some understanding concerning the structure and purpose of shoes.

In considering children's feet in reference to shoes, it is essential to bear in mind certain facts and principles in order to have an idea of what shoes a child should wear. (1) The feet are the last member of the body to come into practical use. (2) The strain imposed on the feet is more severe than on any other member. (3) The full strain is cast upon the feet more suddenly than on any other member. (4) The feet are delicate and it takes months for the muscles to strengthen sufficiently for correct function to take place. Bearing these facts in mind, it is reasonable to think that children should not be urged to walk too early.

Jeffery states that all walking children should wear shoes rather than oxfords to begin with, to relieve some of the early strain of walking, and that there should be no heel so that the calf muscle may be stretched. The rapid development of the calf muscle causes a tendency to contracture of the tendo Achilles.

Economy in shoes is the surest way to foot disability later. Children's shoes should be fitted on a last which conforms to the natural shape of the foot. The Munson or army last shoe is highly recommended as most sensible and correct.

Shoes that are too short have a tendency to produce enlargement of the joints of the great toe by pressing against its end. Shoes that are too loose rub blisters and callosities on various parts of the feet, and those that are too tight give rise to corns. Shoes that are too pointed bend the toes toward one another and spoil their shape.

Custom or fashion is often allowed to dictate the sort of shoes that children shall wear as well as the clothing. So many mothers do not try to fit the shoes to the child's feet, but buy them according to the age of her child.

Boorstein makes the statement that socks are often a factor in causing deformity because they are frequently too short and too narrow and made of unyielding material, thus pressing the toes together.

Boorstein and Kleinberg suggest the following requirements for a proper shoe for children: The shoes must be comfortable at all times. There must be space enough for the independent movement of the toes; broad and low heel. Shape of sole should correspond to that of the foot. Shoe should be flat from end to end and side to side. Lace shoes are better than buttoned, as they are more readily adjusted to the foot. No corset shoes or stiff anklets. Do not use sneakers, tennis or patent leather shoes for regular wear. Patent leather being covered with varnish, is nonporous, and children who wear such shoes soon develop some tenderness of the feet.

Oxfords and sandals are good in strong healthy children with good ankle support. In convalescent, ricketic, undernourished or mild cases of weak feet it is advisable to raise the inner border of the sole and heel of the shoe one-quarter of an inch higher than the outer side in order to throw the weight to the outer side on the foot and prevent weak and flat foot.

Use thick but flexible soles for winter. It is not an uncommon sight to see a young child walking on an icy pavement, wearing thin soled shoes without overshoes, although he may be dressed with heavy woolen coat, cap, mittens and leggings. He is not protected against the chill that comes through the thin dampened soles of his shoes.

Rubber overshoes are necessary when the ground is wet or muddy, but should be removed when the child comes into the house. Rubber soled shoes are not suitable for regular wear, unless there is an inner sole of leather. Oxfords or slippers are not advised until after four years and only in children who show good muscle function in the ankle.

Mr. Fred W. Friend (manufacturer and dealer in shoes and orthopedic appliances) made the statement that price, competition and salesmanship have done more to cheapen the construction of children's shoes than anything else. Instead of shoes being built with an insole and a "Goodyear welt," sewed to the insole with the sole sewed to the welt with a cork padding between, American shoe factories today have adopted the plan of a fake welt or so-called "American welt" shoe. This is a turnout stitch down. In other words, they use no insole, merely taking the upper and turning it outward instead of inward, placing on a little strip of leather and sewing the upper between this strip and the sole. This is nothing more or less than a moccasin in construction, faked to make it look like a big heavy sole. After a shoe of this construction is worn a little while, it will flare up on either side, forcing the heads of the second, third and fourth metatarsals down and the first and fifth up which is the improper position of the foot.

Little or no attention is given to the instep or shank of the shoe, and when the shoes are worn until they have to be half-soled, the shoe maker gets a very little resemblance to the original form of the shoe. It would be a great deal better for the child to be barefooted than to contortion the foot with improperly fitted shoes. Friend also says that "Goodyear welt" shoes are best fitting for the child's feet and the only correct way of building a child's shoe.

The cork padding between the insole and outsole serves three purposes: (1) It acts as a pad which gives spring when walking. (2) It maintains the true form of the shoe and puts a water-proofing and insulation between the inner and outer sole. (3) It helps the wearing qualities.

For several years I have made a study and observation along this line. Using such patients where the demands for the proper clothing was the greatest and in order to keep in touch with many of them, I asked them to come to my office regularly for weighing, hemoglobin and examination and told them there would be no charge made during this observation.

The majority of these cases were young girls between five and nine years of age, giving almost the same kind of history as follows: During the winter months very nervous and restless, not contented, sleep poorly at nights, do very poor work at school, failed to make their grade, hard to discipline. On examination one would find a young girl very poorly dressed for the season of the year, short socks or light cotton weight instead of silk and wool, short sleeves, low neck dresses and in many cases slippers or light weight oxfords.

Physical examination may show head and neck negative, tonsils and adenoids removed or negative, lungs negative, heart rapid but no murmurs, abdomen usually flat and soft, extremities negative, tissues soft and flabby, skin dry, temperature varying from subnormal to slightly elevated, hemoglobin around 70, urine highly acid and in many, slight trace of albumin, underweight from three to eight pounds.

In nearly every case where the mother carried out instructions and put on the proper shoes and clothing, regulating the diet and habits, there was a very satisfactory gain and in some a very marked gain in weight. No tonics or medicines were given.

The appetite improved, the nervous symptoms were much better, urine became more normal, albumin disappeared and in every way a satisfactory change for the better followed. One may say that regulating the food and habits did it, but in these cases there was such a radical change in the clothing that I am convinced the proper clothing brought about the greatest results.

CONCLUSIONS

Should custom, calendar and conversation determine for the mother what the proper or well dressed infant shall wear? Growth itself implies the consumption of energy and, if a part of the total quantity available is dissipated into the air, less must remain for body increase.

The young child has a greater body surface in proportion to its weight than the older child or adult, which offers a greater opportunity for loss of heat by radiation and evaporation. Our local mothers do not have to imitate their European cousins or Florida neighbors to have healthy babies and children.

Comfort perhaps is the best standard for proper or sensible clothing. A correct shoe is one that gives support to the foot, and does not constrict any part or disturb its balance.

There is a great need for cooperation between the doctor, nurse and merchant in bringing to the public the correct clothing and shoes for the growing child.

Arthritic Pain in Relation to Changes in Weather. Edwin B. Rentschler, Francis R. Vanzant and Leonard G. Rowntree, Rochester, Minn. (*Journal A. M. A.*, June 15, 1929), made a study not to prove the existence of a relationship of arthritic pain to weather change but to determine whether or not such a relationship actually exists. They feel certain that many of their patients with arthritis can, through an increase in the severity of their pain, sense the approach or presence of storms. In a group of 367 patients studied for a year there was a positive relationship for 72 per cent of the time between the curve of pain and that of barometric pressure. For 21 per cent of the time the relation was equally definite, but as one line went up the other went down. In only 7 per cent of the time was a relationship undemonstrable. For more than 90 per cent of the time there was a relation between the presence of storms and an increase of pain.

GLUCOSE SOLUTION

ITS OPTIMUM CONCENTRATION FOR THERAPEUTIC ADMINISTRATION

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AND
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Glucose solution is commonly administered by surgeons postoperatively by enema, hypodermoclysis or direct venous infusion. The solvents used are usually pure water, normal saline solution or a weak sodium bicarbonate solution. Concentrations of glucose solutions as used in therapeutics vary greatly according to the judgment of the administrator; they range from one to ten per cent usually, but by some men strengths which are much higher are given. It is very doubtful that all strengths are equally beneficial. Many of them evidently fall far out of the range of an isotonic solution. The reasonable thing to believe is that a physiologically normal solution gives the best results.

It occurred to us to enquire into the matter of tonicity of glucose in solution. Theoretically a 4.9 per cent solution of this sugar in water has the same osmotic pressure as a 0.85 per cent sodium chloride solution and is, therefore, isotonic with the blood and tissue fluids. Since glucose actually enters the blood-stream when therapeutically administered, whether by absorption from the intestinal mucosa, the subcutaneous tissues or from a needle and syringe directly, it seems essential that the solution be isotonic; otherwise there may result damage to the red blood corpuscles.

In order to establish definitely what concentration of glucose in pure water is harmless to the red blood cells we performed the following experiment: Five drops of glucose solution were transferred onto a microscopic slide and one drop of fresh blood, taken from the capillary circulation by puncturing the ear lobe, was then placed in the center of the glucose, a cover glass was added, and the mixture observed at once under the microscope. This was repeated many times, using various subjects. The results were practically identical. The different concentrations which we used and the observations which we made are shown in the accompanying table.

Laking of the erythrocytes occurred when concentrations below 3½ per cent were used, while crenation appeared at 7 per cent. At 16 per cent there was a rapid and severe change with whirlpool action of the two mixing fluids, and in a few min-

TABLE

The action of glucose solution on human erythrocytes as observed under the microscope.

Sugar Per cent	Erythrocytes
¼	Marked hemolysis.
½	Marked hemolysis.
1	Moderate hemolysis.
2	Slight hemolysis.
3	Trace of hemolysis.
3½	No change observable.
4	No change observable.
4½	No change observable.
5	No change observable.
5½	No change observable.
6	No change observable.
7	Trace of crenation.
8	Trace of crenation.
9	Slight crenation.
10	Moderate crenation.
12½	Marked crenation.
16	Marked destruction.
32	Almost complete destruction.

utes less than one-half of the red blood cells were recognizable as such. With higher concentrations the destruction of the red blood corpuscles became even more marked. Concentrations between 3½ and 6 per cent produced no observable changes in the erythrocytes. We conclude from this experiment that a 5 per cent aqueous solution of glucose is the optimum concentration, and that strengths below 3½ and above 6 per cent are harmful to the blood.

It may be argued that we used a small amount of blood in combination with a large amount of glucose solution, while in the usual therapeutic administration of sugar the reverse condition is present; and that any amount or strength of glucose solution entering the blood stream is rapidly diluted or otherwise made isotonic. Still it must be granted that, however small the quantity of foreign substance entering the circulation as compared to the blood volume itself, there can result some damage to some of the blood cells. Often in dehydrated, emaciated or anemic patients even a slight damage may be of grave consequence.

It may, furthermore, be argued that the in vitro method of study is not applicable to injections made in vivo. To this we reply that our experiment follows the same principles upon which are based the typing and compatibility tests for blood which are to be used for transfusion.

Our object was to find which concentration was least likely to be harmful under the most adverse circumstances. When a 5 per cent glucose solution is used there is no demonstrable damage to the red blood cells.

TRACHEOTOMY AFTER THYROIDECTOMY

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In thyroid surgery tracheotomy may be necessary during thyroidectomy, occasionally, even on the operating table. There are occasionally cases after thyroidectomy that develop respiratory distress and cyanosis at a considerable interval following the operation.

Tracheotomy in such a condition may be a life saving procedure. That such a condition in its early manifestation might be overlooked until too late is evident.

Two cases are reported which exemplify this complication. The time of onset was different in the two, in both sufficient warning being given to enable the procedure to be successfully carried out.

The prominent symptoms and signs were the development of cyanosis, respiratory stridor with difficulty especially on inspiration, and weak, rapid pulse, the symptoms coming on slowly and becoming increasingly worse. The patients were able to complain of the difficulty in breathing.

Case 1. S. K., married, white, male, Russian laborer of 50 years, was admitted to Harper Hospital, Sept. 23, 1927.

C. C. Nervousness, loss of weight.

P. I. About five months ago the patient, who was previously perfectly well, began to note loss of weight, nervousness and a fast pounding heart. Sweating was increased, the appetite became enormous. Up to the time of entry he had lost twenty-five pounds in weight. There was dyspnea on exertion and swelling of the feet.

Past and family histories irrelevant for present discussion.

Physical examination. A thin, white male, apparently chronically ill and apprehensive. There were no exophthalmos, von Graef's, Stellweg's, Moebius' or Joffroy's signs. There was a fine tremor of the hands. There was unform, moderate enlargement of the thyroid gland, but no bruit or thrill was made out. The heart was enlarged slightly to the left, and there was a blowing systolic murmur at the apex. B. P. 140/64, pulse pressure, 80. There were inconstant, moist rales at both lung bases. Pulse 94. The rest of the examination was entirely negative. The basal metabolic rate was plus 35 and plus 45. The urine, Wassermann, r.b.c. and w.b.c. were normal. The differential count showed 34 per cent lymphocytes. The radiogram revealed evidence of constriction of the trachea at the thyroid level, with increased density of the thyroid shadow. The heart was a little enlarged in the transverse diameter

The electrocardiogram showed a normal curve. After preparation with Lugol's solution, and rest in bed, the patient was operated on October 6 under N_2O—novocaine anesthesia for toxic thyroid adenoma, a subtotal bilateral thyroidectomy being done.

Laboratory No. 16453. Tissue diagnosis (Dr. Morse). Thyroid adenoma with marked proliferative changes of exophthalmic type.

The patient returned from the operating room at 11:15 a.m., pulse of 104 and good quality, conscious, talking an ordinary tone of voice. At 1 p.m. he became restless, somewhat cyanotic, and complained of difficulty in breathing. Oxygen, adrenalin, atropine and caffeine sodium benzoate were given. The pulse was of poor quality. The breathing and pulse became better for a short time. The cyanosis became worse, breathing stertorous, patient grabbed for his neck. The pulse became very thready, the patient very blue.

Tracheotomy was done at 3 p.m., through the goiter incision (three hours and forty-five minutes after thyroidectomy). The improvement was immediate; the pulse remained of poor quality and irregular for a time, but the respiratory stridor and cyanosis cleared at once. On October 9, the tracheotomy tube was removed.

The convalescence was then uneventful except for moderate seropurulent drainage from the wound adjacent to the trachea. The patient was discharged on October 17 with slight drainage from the middle of the collar incision.

The wound has healed with an incredibly small scar. The patient has gained thirty pounds in weight and is symptomatically well. The voice and the examination of the larynx were normal.

Case 2. K. H., single, Syrian male, laborer of 40 years, was admitted to Harper Hospital Sept. 28, 1927.

C. C. Nervousness.

P. I. About two years ago the patient began losing weight, became nervous, sweated profusely, and noted a prominence of his eyes. One year ago he had a thyroidectomy elsewhere and was better for two months, after which his symptoms again reappeared. He lost fifteen pounds weight and was very nervous.

Past and family histories, except as above, were irrelevant.

Physical examination. A middle-aged man, somewhat apprehensive, with marked exophthalmos and positive Stellwag's, Moebius' and von Graefe's signs. There was a scar of a previous collar incision in the neck, a palpable enlargement of the left lobe of the thyroid, a fine tremor of the hands. The rest of the examination was essentially negative. The pulse was 90. The basal metabolism rate was plus 15 and plus 12 per cent. The Wassermann, urine, blood counts and electrocardiogram were normal. Radiogram showed slight constriction of the trachea at the thyroid level.

After preparation with Lugol's solution, the patient was operated on October 7 for recurring exophthalmic goiter. After the usual collar incision was made, both sides were approached along the inner border of the sternocleidomastoid muscle. On the right a mass of thyroid tissue one-half inch in diameter was removed. On the left a large mass of friable gland was removed from the retrotracheal interspace.

Laboratory No. 16475. Tissue diagnosis (Dr. Morse), primary exophthalmic goiter.

The patient returned from the operating room at 11:00 a.m., pulse of 140 and of good quality. Voice was good. The pulse became weak and much slower. The following day, at 3:00 p.m., he began to have difficulty in breathing, pulse of 104 and of poor quality. The skin clips were removed and a large amount of blood-clot evacuated. The patient was relieved by the procedure. At 8:00 p.m. there was again difficulty in breathing, with some stridor. The pulse became almost imperceptible, the patient became cyanosed and breathless.

Tracheotomy was done twenty-seven hours after thyroidectomy. Artificial respiration was necessary, and caffeine, adrenalin and atropine were given. At 11:00 p.m. the patient's condition was better, but still serious. Following that, however, convalescence was uneventful but not as rapid as in the previous case reported, as there was much wound infection. The tracheotomy tube was removed two days after its insertion. The wound infection was controlled, and an almost unbelievably small scar resulted, when the patient was discharged on November 8, in very good condition. He now reports in very good health. The voice and examination of larynx were normal.

We have reported these cases in order to emphasize the possibility of such complications arising after thyroid surgery. That patients showing the symptoms described above have been treated expectantly by those unfamiliar with this complication is sufficient reason to urge nurses, internes and surgeons, seeing thyroid patients, to be on the watch for such a development, and to recognize it as an emergency.

In both the cases reported we now feel tracheotomy should have been done at the first sign of the complication, as by temporizing the patients' lives were greatly endangered.

The mechanism of this disturbance is not entirely clear. Neither patient had voice disturbance. At the time of tracheotomy the trachea was to palpation very considerably smaller than usual. It would seem from the second case that the pressure of blood-clot could be a factor in the tracheal collapse. This collapse, plus edema of or hemorrhage into the mucous membrane, was probably the cause of the respiratory obstruction.

SUMMARY

1. A condition of cyanosis, respiratory stridor and weak, rapid pulse may develop at a considerable time after thyroidectomy.
2. Tracheotomy is indicated, and may be a lifesaving procedure.
3. The mechanism of the obstruction is probably a combination of tracheal collapse and edema of the mucous membrane.
4. Two cases are reported.

410–412 Medical-Dental Bldg.

Lobar Pneumonia Complicated by Bleeding Gastric Erosions. Philip Rosenblum and Benjamin M. Gasul, Chicago (*Journal A. M. A.*, June 22, 1929), report the case of a child, aged 8 years, coming to the hospital because of pain in the abdomen of four days' duration, vomiting of blood, and bloody stools of one day's duration. The patient had been apparently well until six days before, when she was awakened from her sleep and started vomiting. The vomitus then consisted of the food eaten. The next day the child remained in bed and her skin felt hot. She was very restless all that night and was continually asking for water. On the next day the child complained of pain in the abdomen. A physician was then called and he ordered ice packs to the abdomen and gave some medicine. The child kept getting worse. Pain in the abdomen continued, the patient always pointing to the region above the umbilicus. Vomiting of blood material occurred twice on the day of entrance, and tarry black stools appeared for the first time just before entrance. Stools had been passed once daily for the past five days but no blood was noticed until the day of examination. There had not been any cough, chills, dysuria or hematuria. The author's diagnosis was a left lower lobe pneumonia and a melena probably due to a hemorrhage from the upper gastrointestinal tract, possibly from a peptic ulcer. The patient's blood typed with the father's showed coagulation of the donor's red blood cells. One-sixteenth grain (4 mg.) of morphine sulphate was given hypodermically followed by a 10 cc. intramuscular injection of thromboplastin. Father's whole blood was given intramuscularly at two hourly intervals until a total of 210 cc. had been given. The patient was also given 800 cc. of physiologic solution of sodium chloride. Her condition, however, became more critical, and she died fifteen hours after entrance.

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EDITORIAL

THE ELEMENTS OF A SUCCESSFUL DOCTOR

Although there are several traits of character necessary to the success of a doctor, the most important of these is a genuine, uncontrollable feeling of helpfulness toward mankind. Of course, the doctor must have both the intellectual and physical capacity for prolonged, intense work, combined with a certain indefinable sense of diagnosis and a lack of squeamishness with sick people. But it is evident that, without the underlying desire to help, these secondary elements are useless.

It is a well known fact that the doctor's bill is always the last one to be paid by a hard pressed family. The innate willingness on the part of the doctor to help, even at the expense of himself, is the reason he is so often accused by those in other professions of being a poor business man. He does not push his charges, he does not collect his bills properly, he allows himself to become too easily concerned over the misfortunes of other people. Perhaps all of these things are true. Nevertheless, without this sympathy for others the doctor would have a very defective foundation for a life fundamentally dedicated to service.

Given the desire to help, it is obvious that the man who has the greater mental ability to assimilate and retain the essential facts pertaining to the medical profession will be a far better doctor and do more constructive good than his contemporary who is willing but unequal to the tremendous mental task involved. Likewise, the man who is unable to stay physically fit under the constant grind of working at all hours, sometimes without sleep or food for extended periods, cannot perform the same amount of service as the one with a strong constitution.

At the last we come to those two aptitudes, also partly inherent in the man but difficult to define which are necessary to the successful doctor, a skill in diagnosis and a lack of squeamishness with a sick person. It will be argued that skill in diagnosing infirmities is only acquired through study and experience. This argument, however, does not include the whole truth. If the man does not have a primary curiosity concerning human ills, he does not have the initial urge to study and acquire experience. In the same manner, the dislike of attending sick people can be overcome through persistent application. This application fails to materialize though, unless the beginning doctor ardently desires to subdue it. In conclusion, therefore, it seems as if the old saying to a great extent still holds true that, "doctors are born, not made."

UNIVERSITY EXTENSION LECTURES

There is no medical department in connection with the University of Washington. During the last twelve years, however, the extension service of the University has sponsored a graduate medical course of lectures in Seattle, when many distinguished leaders of the medical profession have appeared before audiences composed of physicians from all parts of the state. General medicine and surgery, together with well known specialties in each of these branches, have been covered by leaders in their various lines of practice. This year the committee in charge has decided to vary the program of subjects which have commonly been presented in past years, and have arranged for series of lectures which it is believed will prove profitable to all who take advantage of them.

Dr. John C. Coulter, of Chicago, professor of physical therapy at Northwestern Medical College, will cover all phases of the practical application of this group of remedial agencies. So much attention at present is given to this form of practice that these lectures should prove of interest and value. Since a knowledge of pathology is essential for the practice of any department of medicine or surgery, the lectures by Dr. Richard H. Jaffé, recently from Vienna, now pathologist of Cook County Hospital and professorial lecturer on pathology, University of Chicago, will be recognized as offering the latest information in this fundamental line of study. He will be prepared to present the most recent information resulting from pathologic work in European laboratories. Dr. Victor C. Myers, professor of biochemistry, Western Reserve University, Cleveland, Ohio, is a distinguished research worker along medical chemical lines. During recent years biochemistry has assumed a position of great importance in medical studies and invesigations. The topics which he will discuss and elucidate will prove of extreme interest and value to the diagnostician. Dr. Jennings C. Litzenberg, professor of obstetrics and gynecology at University of Minnesota, will present the result of the latest studies and investigations in his line of work, which will be of special interest to the general practitioner. Additional information covering the lecture topics will be found on the advertising page. This course of lectures should attract a large attendance from the profession of Washington, as all of these men will offer information that will prove invaluable and up-to-date.

THE AMERICAN MEDICAL ASSOCIATION IN OUR MIDST

The opportunity of attending a meeting of the American Medical Association in one of our cities of the Pacific Northwest has been possible but once in past years. It was more than twenty years ago that the medical profession of Portland served as host to the physicians of the country under the auspices of this national organization. Now they are repeating the notable event, and are entitled to the appreciation and gratitude of the whole profession of this section. The labor, patience and meticulous attention to details necessary for the successful engineering of one of these great conventions can be appreciated only by those who have been officially connected with such an enterprise. The physicians of Portland who have possessed the energy and ambition successfully to put over this great meeting, are deserving of the gratitude and appreciation of the united profession in this Northwest territory. Probably it will be many years before this meeting is again scheduled for this section. As far as can be ascertained from inquiry among the profession at large, it appears that they will move on Portland en masse during the second week of this month. Judging by experience from attendance at other annual meetings of this great organization, it will be well worth while for everyone to be present at this gathering who can possibly arrange for so doing. It is believed this will prove one of the outstanding meetings of our national medical association.

THE ANNUAL MEETING AT YAKIMA

The Washington State Medical Association will hold its annual meeting at Yakima, August 29-31. Members of the association should reserve this date for attendance on this occasion. The Yakima physicians are planning features which will make this a memorable event and attractive to all. An interesting program of papers is being prepared which will make it worth while for all to be present who will be able to do so.

A special feature of the meeting will be the Canti moving picture film of three reels of living cells, taken through a high power microscope, showing growth, cell division and multiplication. Part of the film is of tissue from a chick embryo and part from a rat sarcoma. Both appear in their normal growth and are then subjected to rays from radium emanation. The resultant complete death is a most striking phenomenon.

The picture is remarkable in that it shows in a few minutes the changes produced in the tissues over a period of several days. The technical difficulties of production were very great, requiring much expensive equipment, infinite patience and much ingenuity. One of the most ingenious devices is a small clock so arranged that its image is photographed in the upper right hand corner of the screen, simultaneously with the microscopic exposure. The rapidity of the movement of the hands of the clock, therefore, tells one the actual length of time consumed in taking the picture. The enlargement of the pictures on a good sized screen runs as high as 100,000 diameters, and the apparent speed of the motion is increased up on one thousand times. In other words, you view in one minute the events which actually require sixteen hours. This film is exhibited under the auspices of the American Society for the Control of Cancer, who have kindly loaned it for presentation at this meeting.

BOGY OF HEART-BLOCK IN DIGITALIS THERAPY. William D. Reid, Boston (*Journal A. M. A.*, June 22, 1929), asserts that the fear of the production of heart-block by digitalis medication seems to indicate a misconception of the therapeutic use of this drug. Heart-block is not a prominent feature of the toxic action of digitalis. In fact, some degree of impairment in auriculoventricular conduction usually appears at the dosage associated with the therapeutic effects. There are no records of adequately studied patients who have died solely as a result of digitalis-induced heart-block. Complete heart-block may sometimes be present for years in patients who experience little if any reduction in their ability to perform heavy muscular work. The ventricle possesses tissue that is capable of initiating contractions, and the circulation adjusts to the slowed rate without untoward symptoms. Heart-block, not drug-induced, is usually associated with some serious form of heart disease whose lesions are not limited to the junctional tissues. It is the widespread and often progressive lesions of these diseases which doubtless have caused heart-block to be considered serious. The production of therapeutic heart-block of a degree sufficient to slow the ventricular rate to normal, in such conditions as auricular fibrillation with an accelerated heart (ventricular) rate, is an established principle in the use of digitalis medication.

MEDICAL NOTES

Change of Name. Hoffman-LaRoche Chemical Works, which has carried on its business for many years under this designation, has changed its title to Hoffmann-LaRoche, Inc., Nutley, New Jersey. Other details will be noted in their regular advertisement.

OREGON

College Health Work Expanded. At a recent meeting of the board of regents of Oregon State College, at Corvallis, it was voted to reorganize the department of hygiene, physical education and student health service into a single division of the college. Dr. Claire V. Langton was appointed in charge. Dr. David C. Reynolds, formerly of the staff of the University of Michigan health service, will direct the department of student health. He will be assisted by Drs. Edith P. Sappington and F. B. Smith. The reorganization of the student health service brings to a close the work of Dr. C. R. Mathis, who first organized it ten years ago. In appreciation of his long term of service, during which no serious epidemics of contagious disease occurred on the campus, the board of regents has given Dr. Mathis the rank of professor .emeritus.

Clinic Building Planned. With the return of Dr. Richard B. Dillehunt, dean of the University of Oregon Medical School, Portland, from an eastern trip of inspection, decision was reached to begin within sixty days the construction of a new clinic building on Marquam Hill. The Rockefeller Foundation recently provided $400,000 for the project. The new building, which is to be located between the medical school and the Doernbecher hospital, will be four stories in height. It will provide for the care of ambulatory patients and will add to the present facilities for medical teaching and research at the medical school.

Hospital Ship to Visit Convention. Dr. E. A. Sommer, chairman of the local committee on arrangements for the forthcoming convention of the American Medical Association at Portland, has received word that the United States hospital ship Relief will be anchored in Portland harbor during the period of the convention. The Relief is a fully equipped floating hospital, with accommodations for five hundred patients.

Women Physicians to Meet. The Medical Women's National Association will hold its annual meeting in Portland July 7-9, in conjunction with the annual convention of the American Medical Association. The president of the association is Dr. Louise Taylor-Jones, Washington, D. C. Dr. Jessie M. McGavin, of Portland, has been made chairman of the local committee in charge of arrangements for the meeting.

Secretary Wilbur at Portland. Dr. Ray Lyman Wilbur, secretary of the interior, was among the guests of honor at a special luncheon held in Portland, July 8, by the medical veterans of the World War.

Elected President. Dr. John H. Besson of Portland, who was recently elected vice-president of the American Medical Association at Vienna, where he has been studying for a number of months, was elected president of the Association in April. His interest has resulted in having the headquarters enlarged, with improved reading room and library. His activities have been duly appreciated by other members of the Association.

Joins California Faculty. Dr. C. McCool, Portland ophthalmologist, has accepted the position of professor of ophthalmology in the University of California Medical School, San Francisco.

Marion-Polk-Yamhill Counties Medical Society met at Elks temple in Salem June 4. Dr. Frank R. Menne, professor of pathology at the University of Oregon Medical School, Portland, gave an address on "Carcinoma of the Lungs."

Klamath and Lake Counties Medical Society held its regular monthly meeting at Klamath Valley Hospital, Klamath Falls, June 4. As guests of the society Drs. Adalbert G. Bateman and A. A. Whitman, of Portland, delivered addresses.

Heads Hospital Staff. Dr. G. F. Beardsley was recently elected president of the staff of the Pacific Christian hospital at Eugene.

Dr. R. I. Hall, who has been in practice at Veronia for the past five years, has moved to Salem. His place is being taken by Dr. Marion Ely, a graduate of Emanual hospital in Portland.

Dr. Homer P. Rush returned to Portland June 1, following a period of several months spent in postgraduate study in Vienna, Austria.

Dr. Clyde Mount of Oregon City is convalescing from a severe illness, during which he was confined to the Oregon City hospital.

Dr. Henry J. Gray, formerly of Kansas, has joined the Salem clinic at Salem.

Wedding. Dr. L. D. Gass and Miss Hazel Noble, both of Klamath Falls, were married in that city June 15.

WASHINGTON

Model of Hospital Exhibited. An exact miniature replica of the proposed new King County hospital, prepared by Thomas, Grainger and Thomas, Seattle architects, was exhibited recently at a meeting of the King County Medical Society. The model demonstrates the appearance of the complete hospital plant, as ultimately planned for. Work on the first unit of the installation is expected to commence as soon as working plans have been prepared by the architects and passed upon by the board of county commissioners. This unit, which represents the central building of the group, will be nine stories in height and will accommodate three hundred fifty patients.

Chewelah Hospital Proposed. The Dominican Sisterhood, with headquarters at Helena, Mont., recently presented to the Chamber of Commerce at Chewelah a plan for the establishment of a modern hospital in that city. The plan is contingent upon the requirement that the citizens of Chewelah deed to the Dominican Sisterhood a tract of land suitable for the hospital. Steps have been taken by a committee to bring this about.

Hospitals Merged. Articles of incorporation were filed in Olympia May 27, merging the present Aberdeen General hospital and the Hoquiam General hospital into a single institution to be known as the Grays Harbor Hospital Association. No change in the present hospitals is contemplated, beyond that of providing an enlarged staff and greater facilities for the care of industrial and other cases in the Grays Harbor region.

Medical Library Assured. Spokane physicians have united efforts toward the establishment of a modern medical library in that city. It will be opened in the near future with two thousand volumes and subscriptions to sixty-five medical journals. Space for the library has been donated by the management of the new Paulsen Medical-Dental Building.

New Interns Appointed. Interns recently appointed to serve at St. Luke's Hospital, Spokane, are Drs. P. M. Ellis and V. G. Backman, graduates of the University of Oregon Medical School, and E. B. Parmlee of Northwestern University Medical School. At Deaconess hospital in the same city Drs. A. B. Halliday and P. A. Gibson of the University of Iowa have commenced service.

Another Term as Health Officer. Dr. Charles L. Dixon of Renton was reapopinted health officer for King County for a period of two years, at a meeting of the county commissioners, June 10. This action quieted rumors that Dr. George H. T. Sparling, who recently resigned as city-county health officer for Walla Walla county, would be returned to Seattle as successor to Dr. Dixon.

Health Officer Appointed. Dr. J. E. Vanderpool of Walla Walla was recently appointed by the board of county commissioners to the position of county health officer made vacant by the resignation of Dr. H. T. Sparling.

Health Officer Reappointed. Dr. Marion Le Cocq of Lynden has been reappointed county health officer and physician of Whatcom county. In addition, he will serve as medical director for the county poor.

Hospital at Newport. The former R. H. Reid residence at Newport has recently been remodeled for hospital purposes and is operating under the direction of Dr. W. S. Bardwell.

Veterans' Infirmary Completed. The new one hundred and five bed infirmary at Veterans' hospital No. 85, Walla Walla, was completed and turned over to Dr. W. E. Park, medical officer in charge, May 23.

President of University Board. At the recent annual meeting of the board of regents of Gonzaga University, Spokane, Dr. John H. O'Shea was elected president of the board for the ensuing year.

Dr. H. E. Wheeler of Spokane is convalescing from an operation performed last month at St. Mary's hospital, Rochester, Minn.

Dr. M. S. Harmon, who has practiced in Seattle for a number of years, has moved to Morbridge, So. Dakota, where he will locate for future practice.

Walla Walla Valley Medical Society held a banquet and meeting at the Marcus Whitman hotel in Walla Walla May 23. Dr. and Mrs. William J. Mayo of Rochester, Minn., and wives of the members of the society, were the guests of honor. Dr. Mayo delivered an address on "The Cancer Problem."

Grays Harbor County Medical Society, at a meeting at the Morck Hotel in Aberdeen, June 19, was addressed by Dr. A. Drtina of Seattle. His topic was "The Relation of the Heart and Kidneys to one another When Diseased."

Wedding. Dr. C. M. Anderson and Miss Helen Pringle, both of Spokane, were married at the home of the bride's parents June 1. They sailed a few days later for a trip to Europe.

IDAHO

Hospital Under Reconstruction. Ground was broken June 6 for the construction of a $9000 modern hospital at Caldwell. The institution is being financed by several local physicians who have designed it as the first unit of a community hospital.

Upper Snake River Valley Medical Society met at the office of Dr. W. L. Sutherland, Rexburg, May 13. The following officers were elected for the ensuing year: President, H. B. Rigby, Rexburg; vice-president, T. A. Ellison, St. Anthony; secretary-treasurer, Ray West, Rikby; delegate to the state medical association convention, W. L. Sutherland, Rexburg.

Hospital Burned. A fire, May 26, partially destroyed the Brown hospital at Payette.

Dr. D. E. Bailey, a graduate of the Holy Rosary hospital at Ontario has located for practice at Council.

OBITUARIES

Dr. Edward Calder Heston, Roslyn, Wash., aged 45 years, chief surgeon of the Roslyn-Cle Elum Beneficial hospital, was accidently drowned in French Cabin creek May 18 while on a fishing expedition. He was born in 1884 and graduated from Northwestern University Medical School, Chicago, Ill., in 1909. He had been engaged in practice in Kittitas county since 1910.

Dr. Hilda A. Simon, Seattle, Wash., died at Columbus hospital in that city June 7, from complications following an operation, aged 58 years. She was born in 1871, and graduated from the College of Physicians and Surgeons, San Francisco, in 1905. For several years she was chief of the child welfare division of the Seattle Health department.

Occurrence of Accessory Parathyroid Glands. During a period of five months, William L. A. Wellbrock, Rochester, Minn. (*Journal A. M. A.*, June 1, 1929), examined 1,056 thyroid glands immediately after removal. These glands were situated anywhere on the anterior surface, on the isthmus or on the lateral surface, and a few were embedded in the thyroid tissues, just within the edge of the thyroid. One or more parathyroid glands were found in 7.6 per cent of the 1,056 thyroid glands examined. Parathyroid glands were found in equal numbers on exophthalmic, adenomatous and colloid goiters. The largest gland on which a parathyroid gland was found was adenomatous, weighing 275 Gm.; the smallest was a hypertrophic parenchymatous gland weighing 8 Gm. In two cases, three parathyroid glands were found, in one of which the three were in a cluster. In three cases, two were found, and in two cases one was on each lobe of the thyroid gland. In only one case was there mild transitory tetany following the thyroidectomy.

REPORTS OF SOCIETY MEETINGS

OREGON

PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., E. B. McDaniel; Secty., E. W. St. Pierre

Portland City and County Medical Society held a meeting at the Women's Club building June 5.

The scientific program was devoted to the subject of cardiology. The clinical and pathologic phases of this subject were treated respectively by Drs. Noble Wiley Jones and Robert L. Benson. Dr. T. Homer Soffen spoke on "Misuses of Digitalis."

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., B. T. King; Secty., H. L. Goss

A general meeting of King County Medical Society was held in the auditorium of the Medical-Dental Building, Seattle, June 3, at 8:15 p.m., President King presiding. About 200 hundred members were present.

Mr. Harlan Thomas, architect, exhibited a model of the proposed new King County Hospital and explained the plans for the different departments.

Dr. Goodrich C. Schauffler of Portland read a paper, "Concerning Birth Control and the Futility of Contraception." He quoted Williams to the effect that contraceptive advice will usually accomplish its purpose among the so-called intelligent classes. This should be qualified to read "by no means always." Its result would accentuate the vicious tendency already present toward the reduction of numbers among the educated, and unrestricted reproduction in the ignorant and brutal strata. Attention was called to restriction in population in past eras through war, famine, pestilence and other catastrophies. It is safe to state that ordinarily other considerations than the advancement of the race motivate the average individual. The scientists, for example, who are best equipped to understand their racial responsibilities, have one of the lowest birth rates of all classes. May it not be that the physical stamina, the vitality and virility, which give the so-called lower classes the numerical ascendency, are the more worthy from a biological point of view. What stratum of society, regardless of personal wretchedness, will exclaim, "Here are we, worthless to the race, we will procreate no longer." It may be that the present social and industrial organizations may be partially at the back of the pernicious population tendency, and perhaps something may be accomplished through efforts to correct social and economic maladjustments. The author referred to various efforts for the limitation of population, beginning with Pharaoh's crude expedient of putting to death the offspring of his underisables. The defense of modern advocates of contraception is bound up with the problem of the justice of destruction of human life by humans. Modern methods of birth control are limited to voluntary abstinence, artificial sterilization, abortion and contraception. Mention was made of the "abortariums" of Russia, national institutions where abortion is performed with no attached stigma. Yet there has been no effect upon the birth rate which is still increasing in spite of this universal practice of abortion. If this procedure does not effect a fall in the Russian birth rate, what have the contraceptionists to hope for from their vague and poorly grounded advice.

Dr. Frederick Epplen read a paper, by Dr. Livingston of Portland, in reply to Dr. Schauffler's paper. There was discussion by Drs. G. S. Peterkin, C. A. Smith and J. H. Snively.

Dr. G. W. Swift discussed plans for the entertainment of visitors passing through Seattle, following the American Medical Association meeting in Portland.

The following were elected to membership: Drs. W. W. Bartine, L. A. DeMerchant, F. J. Leibly, Samuel Max, I. O. McLemore, G. R. Ridlon, C. W. Whitaker. Applications for membership were presented from Drs. L. H. Mason and E. W. Templeton.

PIERCE COUNTY MEDICAL SOCIETY

Pres., C. F. Engels; Secty., W. B. Penney

The regular meeting of Pierce County Medical Society was a dinner, held at the Tacoma Hotel, Tacoma, May 28, at which the wives of the doctors were present. Dr. W. G. Cameron, president, presided. During the dinner the Harmonica Quartet, under the supervision of Mr. Walter F. Hanson, Director of Playgrounds, gave several numbers which were much appreciated.

Dr. Ross McPhail was unanimously elected to membership in the society.

The names of the new members who have been taken into the society during the past three years were read.

Dr. Cameron made a short talk, in which he thanked the members of the society and committees for their help during the past year. He then announced Dr. C. F. Engels as the new president. Dr. Engels made a few well chosen remarks and announced committees for the ensuing year. He also announced a special committee to act on entertainment of any visiting doctors who might stop in Tacoma during the American Medical Association meeting.

The meeting closed with a moving picture of his recent trip to South America, presented by Dr. D. H. Bell. This was a very interesting entertainment, and Dr. Bell was voted the thanks of the society for his presentation.

SPOKANE COUNTY MEDICAL SOCIETY

Pres., Carroll Smith; Secty., R. M. Schulte

Spokane County Medical Society held its regular meeting at Spokane, June 13.

Drs. Frank W. Milburn and Wm. L. Spencer were unanimously elected to membership.

Drs. Mitchell Langworthy and E. J. Barnett reported fully on their recent trips east.

By its vote the society decided to change is classification of Honorary Members in order to increase the revenue of the society. It also voted to increase the dues of the members, this increase to be used in the maintainence of the library.

The Paulsen estate has offered space in the new Medical-Dental Building for use by a medical-dental library. A few of the members made voluntary contributions to raise the original fund necessary to establish the library.

The amendments to the by-laws assuring a maintainence fund for the library were esthusiastically passed.

THURSTON-MASON COUNTIES MEDICAL SOCIETY

Pres., C. W. Jones; Secty., N. E. Roberts

Thurston-Mason Counties Medical Society held its spring banquet and meeting at the Shelton hotel, Shelton, May 23. Dr. H. L. Kennedy of Shelton acted as chairman.

Dr. George W. Swift of Seattle was a guest of the society and delivered an address on injuries of the skull and brain. A moving picture film prepared at the Mayo Clinic, representing the course of treatment of infections of the hands, was exhibited.

TRICOUNTY MEDICAL SOCIETY

Tricounty Medical Society, representing physicians of Snohomish, Whatcom and Skagit counties, held its annual meeting at the Everett Golf and Country Club, Everett, June 4. An attendance of sixty was recorded.

The afternoon was devoted to a golf match, followed by a dinner and entertainment at the club house. The scientific session occupied the remainder of the evening. Dr. W. D. Kirkpatrick of Bellingham read a paper on "Injuries to the Shoulder Joint." Dr. H. A. Cleveland of Burlington discussed "Uterine Fibroids." Drs. A. E. Gunderson of Everett and H. J. Green of Stanwood comprised the committee in charge of the program.

IDAHO

NEZ PERCE COUNTY MEDICAL SOCIETY

Pres., W. P. H. Habel; Secty., P. W. Johnson

Nez Perce County Medical Society held its regular monthly dinner meeting at the Lewis-Clark Hotel, Lewiston, June 10, 1929.

Dr. C. J. Johannesson, Walla Walla, presented a paper on "X-ray Therapy" with special reference to some of the less known uses of radiotherapy. Drs. Carssow and Lyle of Lewiston opened the discussion.

Drs. J. C. Lyman, J. T. Rooks, together with Mr. H. Hollenbeck of Western Laboratories, all of Walla Walla, attended the meeting.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

OLD AGE. .The Major Involution. The Physiology and Pathology of the Aging Process. By Alfred Scott Warthin, Ph.D., M.D., LL.D. Professor of Pathology and Director of the Pathological Laboratories in University of Michigan, Ann Arbor. With 29 illustrations. 198 pp. Cloth. $3.00. Paul B. Hoeber, Inc. New York, 1929.

This is an immensely interesting book by a master in pathology who has been examining the dead during twenty-eight years of necropsy work. The monograph is an elaboration on his Carpenter Lecture of the New York Academy of Medicine, delivered in October, 1928. The author has had so many requests for copies of the lecture that he has published it in this amplified form.

He begins with fertilization and conception and follows the life of the intrauterine and extrauterine individual through the whole of his biologic career to the grave. In so doing the various natural changes in the body are described and also the secondary pathology that most commonly arises, owing to the physiologic processes in the stage of involution or retrogression.

Life may be divided into three main parts; that of development to the thirtieth year, that of maturity to the sixtieth, and that of involution from the sixth decade until the ninth which some biologists fix as the theoretical natural span of life. The main concept is that life runs a predetermined, fixed period and that involution or aging is just as much a natural and inescapable process as is conception, growth and development. Indeed, Warthin shows that aging or involution begins with conception and continues all through life in parts of the body and what is called aging differs only in degree from what is always occurring at all ages; instead of affecting only parts of the body as in early life it involves almost all parts in the major involution of old age.

This involution process begins with the disappearance of the female centrosome and male spermatozoa tail, and continues with the placental changes which occur before birth, with sclerosis and obliteration of its arteries, fibrosis of its stroma, atrophy and degeneration of the chorionic epithelium, thrombosis, infarction of villi, calcification, etc., in fact, all of the changes seen in the involution of old age and, when its work is done, it is discarded as useless. So the ductus ateriosus and umbilical vessels become obliterated. These vascular changes are similar to those known as arteriosclerotic in old age and Warthin is particularly emphatic in demonstrating that arteriosclerosis is a natural process, beginning in early life, is not peculiar to old age, and is not due to special causes usually cited, as overuse, infection, etc. These changes are identical with arteriosclerosis and are due to disuse and not overuse.

So involution is seen in the ovary, when escape of the ovum gives rise to corpus luteum, followed by the corpus fibrosum, in which fibrosis and obliteration eventually occur, and in middle life all the essential processes of senescence are seen in the ovary, commonly attributed to arteriosclerosis of old age. Growth and retrogression thus always go hand in hand in the body. The essential, involutionary changes are cell atrophy and degeneration with vascular obliteration and sclerosis, and are identical in kind with the tissue changes of old age, called arteriosclerosis. The chief thesis of the book is that involution is an absolutely normal, physiologic process.

And the biologic reason which Warthin makes perfectly clear is that, when a part or the whole body becomes biologically useless, it atrophies, degenerates and disappears. The paramount biologic purpose of man is reproduction and, when reproductive functions cease, the individual begins to die. In less vulgar form than the old folk saying, "when the reproductive capacity has ceased, then the man is as good as dead." This cessation occurs with the sixtieth decade usually in males, that is spermatogenesis, while sexual desire and potency may persist. The two earliest and most certain signs of senescence are loss of reproductive power (failure of ovluation and spermatogenesis) and accommodation. In fact, the advent of farsightedness or presbyopia is the best index and often the first sign of old age.

Warthin details in a masterly manner the inevitable, disastrous, not to say horrific changes in all the various organs and parts in physiologic decay, or the Great Involution. One inspiring fact which stands out above all the gloom of this recital is that, while the acme of muscular and reproductive power is reached at the end of the third decade, yet the culmination of the spiritual and cerebral development is not attained until the sixth and only falls in the middle of the seventh decade.

The pathology of old age is regarded as secondary to the normal physiologic involution and is dependent upon three main factors: vascular changes, general atrophy and stasis. Under the first are included thrombosis, embolism, infarction, atrophy, apoplexy, cerebral softening, paralysis, psychoses and dementia due to cerebral arteriosclerosis, coronary thrombosis, myocardial infarction, fibrosis and atrophy, angina, atrophic and contracted kidneys, nephrosis, interstitial nephritis with compensatory hypertension, aortic aneurism, etc. Under the head of atrophy a great number of diseases are found, chief among which are senile dementia and myocardial insufficiency. In the category of stasis we find particularly the dilation of ducts due to atrophy of muscle of their walls with urinary incontinence and resulting infections, extending up into the urinary tract and involving the kidneys. Stasis occurs from like cause in the bowels and in the biliary and pancreatic tracts, with resulting inflammation and calculi.

The secondary pathology of old age leads to most deaths. Warthin has only seen twenty-five cases of normal biologic death. In these death was due to simple atrophy of the heart, leading to cardiac insufficiency, arterial anemia and marked passive congestion. Age is the reduced energy charge of the cell. This energy charge was given at the moment of fertilization and is dependent upon the potential fulfillment of function by the organism. The immortality of the germ plasm rests upon the renewal of this energy charge from generation to generation. We will only know the chemicophysical explanation of life and age, when we know the nature of the energy charge and the energy release of the cell.

Warthin scoffs at life extension and other popular means of securing notable old age. He freely admits that the average expectation of life has been extended from 35 in 1880 to 54 in 1920 in this country, but the number of persons in proportion to the whole population living above 80 has not been increased. Indeed he feels that promoting the survival of the biologically unfit to middle age lessens the proportion of the markedly aged survivors. Only breeding from long-lived stock will secure long life.

Finally, the author deprecates the desire to extend old age to its physiologic limit, described by the immortal Shakespeare as "second childishness and mere oblivion, sans teeth, sans eyes, sans taste, sans everything." Likewise he deplores the artificial methods now in vogue, especially abroad, of Voronoff and Steinach, by testicular transplantation and ligature of the vas deferens. The results of these attempts at rejuvenation are still uncertain but at most they accomplish reerotization with some increased energy of general metabolism. It is a stimulation of cells forever deteriorated by atrophy and it may even lead to sudden death in old men. His closing chapter on the philosophy of old age, which cannot be deferred or rejuvenated, is both wise and full of comfort. The whole book abounds with masterly knowledge of age and the dead by one whose life has been given to study of the dead, nor is it not lacking in spiritual insight. It is a subject that must appeal to all who are living, hence this extensive review.

WINSLOW.

PRINCIPLES OF PATHOLOGY for Practitioners and Students. By H. D'Arcy Power, M.D., F.R.P.S., Professor of Pathology, College of Physicians and Surgeons, San Francisco, etc., and William W. Hala, M.D., Assistant Professor of Pathology, Long Island College Hospital, Brooklyn, N. Y., etc. With 298 illustrations, many of them in color. 787 pp. D. Appleton and Company, New York and London. 1929.

The "foreword," by Charles Norris, states that this work has been "written for the use of medical students and general medical practitioners rather than for expert pathologists." The book is divided into two parts, general pathology, and systemic pathology. In Part I a chapter includes an interesting discussion of the cell with paragraphs in cell structure and "where is the living substance." The chapter on inflammation is comprehensive and well worth reading. The chapter on neoplasms contains the following paragraph: "Fundamentally, a neoplasm is a growing collection of cells that have become detached from the ordered structure of the body. It takes no part in its functional activities and leads a parasitic existence, distributing its relations by growth and often poisoning it with the products of its metabolism." While the statement may not be true in all cases, we believe that most neoplasms have their origin from cells which from various causes have been liberated from the internal and external restraints that enforce their cooperation in maintaining the structure and work of the body.

In general the photographs of the gross specimens show the macroscopic pathology very well. The author has done much of the picture work himself and the methods with explanations are fully given in the appendix. The index numbers refer to sections rather than to the customary pages which is somewhat confusing. The work offers a comprehensive study of the pathology of diseases of all organs. The latest theories and conclusions are presented in a manner comprehensible to every practitioner.

MOSIMAN.

ULTRAVIOLET RADIATION AND ACTINOTHERAPY. By Eleanor H. Russell, M.D., B.S., Dunelm, Honorary Physician Sun-Ray Clinic, Newcastle-on-Tyne, and W. Kerr Russell, M.D., B.S., Dunelm, Medical Director Sun-Ray Clinic, Newcastle-on-Tyne, etc. Third Edition, 648 pp. $6.50. William Wood and Company, New York, 1928.

This book presents an extensive consideration of ultraviolet rays. There is a discussion of radiant energy and natural ultraviolet radiation which furnish a basis for further elaboration. Carbon arc and quartz mercury lamps are presented, with descriptions of various makes and forms. There is a greater variety of these lamps in Europe than in the United States. On the Continent there is a much greater application of the carbon arc lamp while the mercury quartz is the favorite in this country. Physical properties and biologic effects of ultraviolet radiation are dealt with in suitable chapters. It is shown that this form of radiation effects constitutional results to a greater extent than is commonly considered. Much space is devoted to technic, as the authors consider a proper application very useful. It is stated it is foolish to suggest that ultraviolet radiation is a cure-all, but equally absurd to doubt the favorable results that many workers have claimed as a result of actinic treatment under most diverse conditions. Its greatest field of usefulness lies in the prevention rather than in the cure of disease, although it is almost a specific

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remedy in some dissimilar conditions, as rickets, surgical tuberculosis, alopecia areata, spasmophilia and hay-fever. There is an enumeration of nutritional disorders which are benefited by this therapy, also a recital of other internal diseases which are likewise benefited. In skin affections benefit may result from general or local application. Suitable conditions for such treatment are presented. This volume presents a reasonable and intelligent discussion of ultraviolet therapy and can be recommended for practitioners interested in this line of practice.

THE NEW-BORN INFANT. A Manual of Obstetrical Pediatrics. By Emerson L. Stone, M.D., Assistant Clinical Professor of Obstetrics and Gynecology, School of Medicine, Yale University, etc. Cloth. 183 pp. $2.00. Lee & Febiger, Philadelphia, 1929.

This little volume is an enlargement of a course of lectures delivered by the author to undergraduate medical students. It is his belief that the care of the new-born is a much neglected department of medical teaching. Professors of obstetrics usually devote their entire time to maternal problems, while pediatricians as a rule do not have the opportunity to make studies of young infants in large numbers.

In the chapter on immediate care of the new-born the author emphasizes the necessity of utmost gentleness in applying resuscitation measures. He advocates the four-hour schedule of breast or bottle feeding, but advises shorter intervals in suitable cases. He condemns sweetened condensed milk in routine feeding but recommends unsweetened evaporated or dried milk preparations under certain conditions. Other chapters are devoted to nursing technic, pathologic aspects of lactation, dietary disorders of infancy, birth injuries, infections and other disorders of the new-born. The author is to be complimented on having successfully prepared a concise volume, containing a wealth of valuable material not only for medical students but also for all physicians and nurses who are interested in the subject of the new-born infant. OLMSTED.

PHYSICAL THERAPEUTIC TECHNIC. By Frank Butler Granger, M.D. Late Physician-in-Chief, Department of Physical Therapeutics, Boston City Hospital; Director of Physiotherapy, United States Army, etc. With a Foreword by William D. McFee, M.D., Boston. Octavo volume of 417 pp. with 135 illustrations. Philadelphia and London: W. B. Saunders Company, 1929. Cloth $6.50 net.

The wide-spread interest in physical therapy at the present time demands an authoritative work which will offer the student information on the essential features of this line of practice. This volume admirably satisfies this demand. The author states it has not been written for the specialist in physical therapy but rather for the physician with limited equipment who seeks direction for its employment. It is stated that all physical measures are only a part of the triad of medicine, surgery and physical therapy. In the main physical therapy is used as an adjunct to ensure functional restoration. After a discussion of electric physics and physiologic effects produced by electricity, each phase of electrotherapy is considered in a brief and enlightening style, sufficient details of each being presented to give one a working knowledge of their applications. The author lays particular stress on the galvanic current, which has been neglected in recent years. The very useful therapy of galvanic ionization is emphasized and its applications duly described. Faradic, sinusoidal and static electricity are clearly discussed and their applications noted. The usefulness of diathermy is presented and its therapy illustrated in various diseased conditions. About a third of the volume, under "Index of Diseases," considers the many pathologic conditions which are benefitted by physical therapy. They are arranged alphabetically with specific directions given for their treatment by suitable physical means. Anyone interested in physical therapy will find this a valuable volume for study and guidance. None superior is obtainable for general information in this line of therapy.

THE TONSILS AND ADENOIDS AND THEIR DISEASES, Including the Part They Play in Systemic Diseases. By Irwin Moore, M.D., C. M. (Edin.). Late Honorary Surgeon to the London Throat Hospital for Diseases of the Throat, Nose and Ear, Great Portland Street, etc. 395 pp. $6.50. The C. V. Mosby Co., St. Louis, 1928.

This comprehensive work is a valued contribution to this important subject. The author writes of the part played by the tonsil in focal infection in a very convincing manner and explains his point with the aid of a wealth of illustrative cases. The question of tonsil function is not conclusive, but few indeed have the courage to state what seems to be a fact, that the tonsil is not an organ but an irritative hyperplasia of an exposed lymphatic gland.

The chapters on surgery of the tonsil show the modern trend, inasmuch as the author describes the "Sleuder" and the dissection snare methods. The advantage of turning the tonsil in suitable cases, however, seems to have escaped him.

His chapters on tonsil hemorrhage are very useful, as the subject is handled in detail in all aspects. It is impossible in a work of this kind to illustrate the refinement of every great operator, but as a whole the methods used are standard and surgically sound. PERRY.

CLINICAL ELECTROCARDIOGRAMS. Their Interpretation and Significance. By Frederick A. Willius, M.D. Section on Cardiology, The Mayo Clinic, Rochester, Minnesota, and Associate Professor of Medicine, The Mayo Foundation, University of Minnesota. Quarto of 219 pages with 368 illustrations. Philadelphia and London: W. B. Saunders Company, 1929. Cloth $8.00.

The text of this book has been devoted to the subject of reading the records themselves and their clinical significance. Controversial questions and theories are not discussed. For these reasons the volume will prove of greater value to the clinician than most of its predecessors. It will be most helpful to those working daily with the now numerous electrocardiographs, as nearly every abnormality is illustrated and its clinical significance indicated. The prognostic value of inversion of the T wave is shown in tables involving hundreds of cases. VONPHUL.

NORTHWEST MEDICINE

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ADDRESS

MEDICAL LEGISLATION AFFECTING OUR PROFESSION *

H. P. Ross, M.D.
NAMPA, IDA.

It is well that at least once a year the members should meet and renew acquaintances and develop the "get together" feeling with a wholehearted resolve that the profession in the State of Idaho shall and must act as an undivided unit. It was unfortunate that geographically the state had formerly been handicapped in the matter of transportation which naturally made it difficult for the members in the various districts to attend state meetings. With our new state highways which make it possible for any member to attend with not more than one day's travel, it would appear that we should have a larger representation from all parts of the state. The longest distance reported to me was traveled by your next president, who made the 700 miles in twenty-four hours.

We are fortunate at this session in that the national meeting is to be held in Portland. Fortunate, first, because it gives the members the opportunity to attend the national convention by stepping outside their own door. I trust many may appreciate the privilege and attend this A. M. A. meeting. Doubly fortunate, the Portland meeting has attracted wise men from the entire world, and I am grateful to say that some have kindly consented to stop off with us at Lewiston and appear on our program. I am sure I express the sentiment of the whole Association when I say, "We thank, and again we thank you!"

It seems there has been an unwritten law handed down from ages past, whereby the President is supposed to inflict a few words upon the annual meeting. I appreciate the fact that our program this morning is well filled and I do not propose to infringe on the time of our guests. My esteemed predecessor, Dr. Barclay, chose as topic for his address, "Problems Confronting Us," and among other things stressed the importance of cooperation. Problems will continually confront us, but with an unanimity of spirit I believe they shall be solved one by one.

A short resume of the final action of the legislature will indicate that results were rather satisfactory. The 1929 session of the Idaho legislature was probably the most active in legislation concerning the medical profession in the State of Idaho.

The last two annual meetings of the Association endorsed the Basic Science Bill which was to be introduced in 1929. This was prepared, but the Department of Law Enforcement deemed fit to submit a compromise bill, apparently designed to raise the standards of all professions or cults. A close study was made of this bill and certain amendments were suggested and after conference

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* President's Address, read before the Thirty-seventh Annual Meeting of Idaho State Medical Association, Lewiston, Ida., July 5-6, 1929.

were adopted. This was introduced, passed both Houses and signed by the Governor. It requires all those engaged in the practice of the healing art after 1934 must have two years in a college of letters and sciences as taught in the University of Idaho or such course to be approved by them. This was the nearest definition that could be devised for a two year premedic course. So, chiropractors, osteopaths, and medical men will be required to have a two year premedic in addition to their professional school course. According to the osteopaths themselves this is the highest requirement of any state, the highest upon any statute being one year premedic which involves the osteopaths and does not make this requirement of chiropractors.

The following bills passed by the legislature are of interest:

House Bill 26, as previously stated, requires all those matriculating after July 1, 1934, to have a two years college course in a college or university teaching letters and sciences, equivalent to the standards of the University of Idaho. This law and its effect is being watched closely. There have been a number of requests from other states for copies of this law.

House Bill 30. This law strengthens our present medical practice act. It makes it unlawful for any person who is not licensed in the State of Idaho to practice any branch of the healing art or to call himself Doctor, Dr., or Professor.

House Bill 31. This law amends the compensation law by excluding all employees, "Engaged in navigation or aircraft while underway."

House Bill 36. This law is a modification of our present quarantine law. The law provides, "That the local health officer may remove contacts from quarantine within shorter periods than herein specified, if they have been properly immunized and in his judgment and the judgment of the county physician there is no further danger of spreading the disease from the quarantined person or premises."

House Bill 102. This law provides funds for the Bureau of Child Hygiene. It specifies that, if the Federal Government does not make an appropriation to match the appropriation of the legislature before December 31, 1929, the Bureau shall cease to exist at that time.

House Bill 118. This law provides that, where a license has been revoked for four years or over for nonpayment of the renewal fee, it will be necessary to again make application to the board of examiners for reinstatement. This bill was fostered by the dental profession.

House Bill 121. This law places the Board of Eugenics under the jurisdiction of the Department of Public Welfare.

House Bill 166. This law requires all pupils upon their first entrance to school to furnish a birth certificate.

House Bill 193 provides exemption from taxation upon hospitals owned, operated and controlled by any religious or benevolent corporation or society with the necessary grounds used therewith and from which no gain or profit can be gained by reason of their operation.

This 1929 legislative session was also the most complex one ever held in the state because of the "age old cry" of tax reduction. All politicians were looking for ways and means to lower taxes. Our cause was complicated by a nonmember. It was assumed he represented the profession. He attended the various tax meetings, debating the question of exemptions for physicians and hospitals. While his intentions may have been the best, he incurred the ill will of some interests. As a rebuke to him and the profession these same interests made certain changes in the tax laws affecting the profession and hospitals. The move upon the part of our enemies was cleverly timed and made a part of the general tax bill which had been agreed upon by practically all groups.

One change concerned exemptions of physicians and hospitals. An emergency call was sent to the members to assist in defeating this bill and a survey shows that only three of our members had responded to the call.

This bill also requires all fraternal, church and other charitable organizations to pay taxes upon any building owned by them, if rented for dances or entertainment of any kind. The influence of all fraternal and veterans' orders in the state was brought to bear to defeat this bill, but to no avail. The fact that so many bills relating directly or indirectly to the profession were introduced proved a handicap.

House Bills 262, 263, 264. These laws amend the probate laws of the state and provide different forms and shorter time for filing claims against an estate.

Senate Bill 45. This law provides that other physicians than the city and county physicians can be designated by the Department of Public Welfare to examine the employees of public eating places.

Senate Bill 100. This law is of great interest to every physician in Idaho because it raises the fee of the physician called at insanity hearings from a $5 flat fee to "$10 and mileage, but in complicated cases the fee is to be set at the discretion of the Judge."

Senate Bill 109. This law strengthens the law pertaining to collection agencies and protects the person listing accounts. It is hoped that this will be the means of correcting a great many evils that have existed in the past.

Senate Bill 137. This law amends our medical practice act by providing a more flexible procedure for revocation of medical licenses before the Medical Board. The old law was unworkable.

Senate Bill 166. This amends the Workmen's Compensation Law by allowing minors the same compensation as adult workmen; it also provides that all accidents must be reported to the employer by the injured employee not later than sixty days after the accident; it also provides for a readjustment of premiums upon industry by the State Insurance Fund.

The following bills were defeated at the last session of the legislature.

House Bill 58. This bill called for the erection of a tuberculosis hospital and an appropriation of $140,000.

House Bill 83. The old age pension bill.

House Bill 151. This bill provided for a compulsory $4.00 poll tax.

House Bill 279. This bill was the so-called income tax bill.

Senate Bill 53. This bill placed the sale of glasses, lenses and frames practically in the hands of the optometrists.

Senate Bill 125. This bill attempted to amend our present law dealing with professional secrets. It provided that in case of a damage suit, whether in the courts or before the Workmen's Compensation Board, the physician would be compelled to testify.

Senate Bill 117. This was the Basic Science Bill, which was substituted by House Bill 26.

Senate Bill 164. This was the well known osteopathic bill, a chronic repeater.

I merely refer to these measures carried and defeated by number, trying to give the salient points. Members interested in any separate matter can get full information by writing the office at Boise.

A few suggestions as to recent developments or problems: We, as a profession, have given time generously to the Child Clinic. Recently the chain store has taken advantage of "baby week" to hold clinics, with full page advertising, boosting some medical men in flaming headlines. I think the House of Delegates should take some action in this matter.

Recently I find that street vendors have been using the name of one of our noted clinics to advertise their wares, using the name of the American Legion and one of the leaders in the clinic. I wish to call the attention of the members to this form of quackery.

I would draw attention to the various published reports of inefficiency in some of our state institutions. I believe that a study by members in close proximity to institutions would be helpful and suggest a committee be appointed to aid such study and to report at our next meeting.

I believe we should endorse the periodic health examination campaign. The people of our state should be urged to seek the advice of the family physician before maladies develop that may prove incurable, if unrecognized early. Early detection of these diseases will afford prompt and powerful protection to the public. Our members should boost this campaign on every occasion.

From a long experience and observation with county societies I would suggest a study of conditions, whereby the state organization can assist county societies. The foundation of our entire organization rests upon the county units. I strongly recommend that each county society stimulate interest in its meetings by ocacsionally inviting public speakers. The state officers will gladly give any assistance requested. A strong county society will promote both social and professional relations.

I wish at this time to thank the Legislative Committee for their loyal support and to express my appreciation of the cooperation of the Council and the various committees and officers. We have been attacked by insidious foes not only brazenly in our face but from beneath and behind. Naturally in self-protection we must gird our armor and put up a defense.

At this session through your House of Delegates you elect new officers. Give them the loyal support they are entitled to and should expect and I am sure they will carry on to greater and better things.

ORIGINAL CONTRIBUTIONS

ARTERIOVENOUS ANEURYSMS *

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The subject of arteriovenous aneurysms is a very large one and to discuss all the different phases of this most interesting condition is impossible in the short space of one paper. In the last few years a great deal has been added to our knowledge of this subject by the writings of Matas, Halsted, Callander, Reid, Holman and Dandy. To Reid in particular we are indebted because of the fact that, after the largest personal experience with this affection reported in the literature, he has called attention to the similarity of arteriovenous aneurysms of the trunk-line vessels and those aneurysmatic and blood vessel tumors of the smaller peripheral arteries and veins.

Under the term arteriovenous aneurysm is included "any abnormal communication established between the arterial and venous channels." This is the definition given by Matas[1] and is, of course, all embracing, including not only unquestionable cases of arteriovenous anastomoses between the trunk line vessels, but should include also that large group of clinically allied conditions, such as cirsoid aneurysms, racemose aneurysms, aneurysms by anastomosis, pulsating and simple angiomata, pulsating nevi, angioma cavernosa, varix aneurysmaticus, angioma plexiforme, aneurysma serpentina, reported under many and confusing titles dependent entirely on the descriptive forms "cavernous," "racemose," "cirsoid" and "serpentine," whether applied to arteries or veins, denoting only a superficial expression of the lesion and not the underlying fundamental pathologic change responsible for the unusual state of the vessels and the abnormal flow of blood.

Hunter[2] in 1757 described for the first time the clinical syndrome of arteriovenous fistula and stated that this condition always developed as a result of trauma usually a transfixion, by a cutting instrument, of an artery and a vein lying close together, the apertures of these vessels subsequently becoming fused and permitting a mutual flow of blood between them. Hunter[2] in 1762 in a detailed publication described accurately not only the clinical features but also to a greater extent the disturbed vascular mechanisms of the physiology of arteriovenous fistula. In the two cases reported by him at this time the etiologic factor was the knife of a phlebotomist little versed in the arts of anatomy and surgery, a wound having been produced in the arteries and veins simultaneously.

In 1835 Porter[3] and others described cases in which there had been established an arteriovenous fistula by erosion of the accompanying veins, due to a pathologic process involving the artery. The former type described by Hunter became known as an acquired and the latter a spontaneous arteriovenous fistula. It was not until 1867, however, that Sir Prescott Hewitt[4] reported the first case of a probable congenital arteriovenous fistula. (Arteriovenous fistula and arteriovenous aneurysm are synonymous terms, but the latter is to be preferred.) The acquired, spontaneous and congenital, of course, comprise the entire group of arteriovenous aneurysms.

For many years Halsted collected all the reported cases in the literature of arteriovenous aneurysms which in 1914, including his own in the Johns Hopkins Hospital, amounted to 447 cases. A splendid analysis of these cases was published by Callander,[5] which at the same time gives an excellent bibliography. Halsted and Callander define this condition as follows: "By arteriovenous aneurysm is meant any pathologic union between an arterial and a venous channel, whether that communication exists between a systemic artery and vein, between an artery and a venous sinus or between the aorta and the right ventricle, the right auricle or the pulmonary artery."

CLASSIFICATION

From time to time different varieties of these aneurysmal tumors have been reported, depending on their external form, and the manner in which the anastomoses have occurred. Although such a classification is of no value from the standpoint of elucidating the pathologic process, they are at the same time helpful as a means of differentiation in description and of general interest. The different types and varieties as classified by Cruveilhier in 1853 were:

1. *Aneurysmal varix.* This is the simplest form of junction between a trunk line artery and vein, in which the wounds of the artery and vein become agglutinated with a single orifice of communication and in which no saccular dilatation, true or false, springs from the artery, vein or channel of

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* Read before the Seventh Annual Meeting of Pacific Northwest Medical Association, Tacoma, Wash., July 5-7, 1928.

* From Department of Surgery, Johns Hopkins University, Baltimore, Maryland.

communication. The tumor is aneurysmal because it has a communication with the arterial circulation and because of its venous dilatation is designated as varix.

2. *Varicose aneurysm by dilatation.* When the vein becomes ballooned out into a circumscribed swelling, while the walls of the artery are not included in the dilatation. Aneurysmal varix may develop into a varicose aneurysm by dilatation by insensible gradations.

3. *Encysted varicose aneursyms.* In the event that the artery or vein or both is transpierced so that, although the edges of the wounds destined to form the fistulous communication early become approximated, the other wound or wounds remain patulous.

Blood extravasates into the perivascular tissues from those untreated wounds in the vessels, forming a false aneurysmal cyst or cysts, whose walls are made up of laminated blood clots and the tissue surrounding the vessels. These cysts may be connected with an artery, in which case the encysted varicose aneurysm is known as an arterial encysted varicose aneurysm, and in the event it is connected with a vein, as a venous encysted varicose aneurysm, or if occurring on both artery and vein, the aneurysm is known as a double arterial and venous encysted varicose aneurysm. If an extravasation has formed between the artery and vein and prevents their union so that a false aneurysmal sac is formed between the two vessels and serves as the channel of communication, the condition is then known as an intermediate aneurysmal cyst. The presence of one each on the artery and vein is known as a double arterial or venous intermediate encysted varicose aneurysm. Callander further points out that in two cases, reported by Park[6] and Mignon[7], the artery had a fistulous communication with two different veins; the aneurysmal tumor was then defined as an arteriobivenous aneurysm. These descriptions of form apply only to the more usual varieties found to occur in acquired and perhaps spontaneous arteriovenous aneurysms. The varieties of shape and form, of the congenital types, are, as would be expected, almost as numerous as there are aneurysms. However, two distinct types have been demonstrated (Rienhoff[8]): Those aneurysmal tumors in which there occurred lateral anastomoses between two or more large trunk vessels and those in which there was more of an end-to-end anastomosis.

This classification is, of course, labile because all gradations have been reported between these two more or less distinct types. This is not surprising, when it is recalled that these abnormal arteriovenous communications probably result from a persistence of the primordia of the embryonic vascular tree.

It will be noted that the different types of acquired and congenital aneurysms mentioned in the above classification have to do generally only with those which have involved mainly the larger trunk line vessels, for we have come to regard arteriovenous aneurysms almost solely in this respect. However, if our definition of an arteriovenous aneurysm is referred to, it is at once evident that all forms of abnormal arteriovenous communications (appropriate term introduced by Reid) should be regarded as arteriovenous aneurysms regardless of their size, position in the body, diameter of the vessels involved and their anatomic location. In the light of recent investigation it has been demonstrated that the term arteriovenous aneurysm should include not only those anastomoses between the trunk line vessels but also many of the less obvious blood vessel tumors which heretofore have been classified as cirsoid, cavernous, serpentine, racemose and anastomosing aneurysms, all purely descriptive terms which owe their origin to a lack of knowledge concerning the true pathologic condition.

As shown by Reid[9], Stanley[10] as long ago as 1853 suggested that there was a free communication between the arteries and veins in cirsoid aneurysms. Later Thorndyke[11] in 1878 reported a cirsoid aneurysm of the arm as an arteriovenous fistula, to be followed with similar reports by Cahen[12], Bramann[13], Warren[14], Meleny[15] and finally Berry who as late as 1906 suggested that the trauma which so frequently causes cirsoid aneurysms resulted in an injury to both the artery and the vein, thus allowing arterial pressure to be transmitted to the interior of the vein. The increased pressure would naturally cause distension of the thin walled veins and a tumor composed of dilated tortuous veins would result. Nevertheless, in spite of these observations, the great majority of the pathologists and surgeons have considered these aneurysmatic tumors not as arteriovenous aneurysms but true neoplasms.

In a recent review of the reported cases of congenital arteriovenous aneurysms Rienhoff[8] revealed a striking association and similarity between congenital hemangiomata and congenital arteriovenous fistulae. An excerpt from the summary of that study was as follows.

"Congenital arteriovenous fistula is a very rare condition but a definite clinical syndrome, which has been confused in the past with other *congenital* anomalies of the blood vascular system, such as aneurysm by anastomosis, cirsoid aneurysm, nevus maternus, pulsating nevus and venous aneurysm. In consideration of the mode of development of the blood vascular system, and in view of the fact that in one experiment an arteriovenous fistula was observed in formation, we feel that congenital arteriovenous fistula occurs as a result of a persistence of vessels or communications of the primary vascular anlage, which, failing to develop into the normal definitive vascular tree, results in the formation of anastomotic channels either directly or indirectly between otherwise normally developed arterial and venous trunks.

"In this series of cases and experiments a number of types of congenital aneurysmal tumors were demonstrated and it was felt that these cases and experiments proved beyond question that a congenital blood vessel tumor may take its origin in embryonic life from the developing blood-vascular tree. The type of aneurysmal tumor which shall develop depends entirely upon the tissue making up its constituents. It may be an arterial tumor, it may be purely venous, or it may be an arteriovenous tumor, a combination of both arterial and venous constituents with anastomoses between them. If purely capillary, it will fall into the group of hemangiomata, such as the telangiectatic or even the cavernous. They are all the result of the persistence of some part of the primary embryonic vascular anlage which has come down into adult life and they are not at all of the nature of a neoplasm. The abnormal channels may lie latent for a number of years before opening up, and when they do become patent, the type and number of anastomoses present directly determine the future course of the aneurysmal tumor.

"The foregoing cases demonstrate that in an arteriovenous fistula, if the arteries run directly into the veins, the enlargement of the tumor is much more rapid than when the artery and vein are connected only by small communications. The hydrodynamic factors, such as the amount, rapidity and direction of the flow of the blood, together with the intravascular tension, are wholly responsible for the increase in size of the vessels and thus of the tumor. In the cases in which it was possible to study miscroscopic sections there was not the slightest suggestion of a new growth of blood vessels in the sense of a neoplasm."

The close association of hemangiomata with congenital arteriovenous fistulae was shown by two cases and it was felt that the etiology of the two conditions was the same, i.e., a persistence of the embryonic type of vascular channels. A great part of the confusion of the early authors probably arose from their inability to distinguish between arteries and veins in these arteriovenous tumors, as the veins are thicker than normal and carry arterial blood.

In several cases an apparently harmless hemomgioma progressed after laying latent for a number of years to become a very serious aneurysmatic tumor with the clinical appearance of an arteriovenous fistula. (Continuous thrill and bruit. Proximal dilatation of the artery and proximal as well as distal distention of the veins). It was suggested at that time that the etiology of *congenital* arteriovenous aneurysms and hemangiomata might both be due to a persistence of embryonic vascular channels and in no sense of the nature of a true neoplasm. However, from 1853 on, these suggestions were scattered over a long period of time and the evidence presented insufficient to amount to more than an hypothesis, until the most comprehensive publication of Reid[9] in 1925 presented undeniable evidence of the similarity of arteriovenous aneurysms, cirsoid aneurysms and simple angiomas, and demonstrated unequivocally, it would seem, that all of these tumors, congenital and also acquired, are instances of abnormal arteriovenous communications. Reid cites four indisputable cases of cirsoid aneurysms, in which he demonstrated free communication between the arteries and veins and calls attention to a few other similar cases in the literature.

According to Reid, "Cirsoid and arteriovenous aneurysms are alike in many other respects. Etiologically trauma and congenital abnormalities are productive of both conditions. Trauma is by far the most frequent cause of arteriovenous aneurysms; it probably is the most frequent cause of cirsoid aneurysms. Many of them have followed a blow on the head, and most of the cirsoid aneurysms occur in this region. In this very vascular region, where the bone is near the surface, blows might easily establish an arteriovenous communication, taking the form of a cirsoid aneurysm. Indeed, many of the so-called congenital cirsoids of the head may have had their origin in the pressure exerted on the skull at childbirth. Clinically both conditions lead to enormous dilatations and pulsation of the involved veins and proximal arteries. Therapeutically each condition may be cured by obliterating in some way the abnormal arteriovenous communications, and neither can often be cured in any other way.

"From a study of the reported cases of cirsoid aneurysm and of my own cases, I cannot escape the conclusion that there is no difference between this condition and arteriovenous aneurysm, except that cirsoid aneurysm has been applied to that condition which results where abnormal arteriovenous communications occur in the more peripheral and smaller vessels."

It is, therefore, evident that a classification of arteriovenous aneurysms to be all embracing must of necessity include not only those aneurysmatic tumors involving trunk line vessels, but also those composed of the small peripheral arteries and veins and even the arterioles and venules.

ORIGIN OF ARTERIOVENOUS ANEURYSMS

As mentioned before, these abnormal arteriovenous communications are either acquired, spontaneous or congenital. The two cases originally described by Hunter were acquired, the result of a penetrating wound. Since that time, although the method of injury has changed with the advance in years, the great majority of arteriovenous aneurysms are the result of trauma. In the series of 447 cases reported by Callander, 383 or 85.7 per cent, resulted from an injury. Penetrating wounds similar to those produced by knives or bullets comprise the main causative factors. Three cases were congenital. Twenty-seven of Reid's series were acquired arteriovenous aneurysms, resulting from trauma and six were congenital.

As in Callander's series, Reid found penetrating wounds to be the most usual cause of acquired cases of arteriovenous aneurysms, while fractures, amputation and even contusions were occasional causes. Reid[9] cites Colles[17], 1855, as reporting a case of arteriovenous aneurysm between the femoral vessels, caused by a blow which did not pierce the skin. This is so far, I believe, the only case reported of an arteriovenous aneurysm of the trunk vessels being produced by a contusion, although it has been observed by others previously, notably Billroth[18], that the aneurysmatic tumors made up of the smaller vessels are frequently caused by contusion of an exposed vascular area, where numerous small arteries anastomose, as in the scalp over the occiput, vertex and temples and about the knees.

However, Reid[9] was the first to emphasize the true nature of these acquired cirsoid aneurysms, for although Billroth[18] reported them as aneurysms, the arteriovenous anastomosis was not pointed out by him. Reid[9] says, "contusion is of particular interest to me as a cause of arteriovenous aneurysm. Rarely does it produce a fistula between large arteries and veins, but I believe that this form of injury is the most common cause of cirsoid aneurysms, because fistulae are established between the smaller arteries and veins." Pemberton[19] recently reported a series of sixteen cases from the Mayo Clinic, all of which were caused by trauma (penetrating wounds). Thus, considering abnormal arteriovenous communications as a whole, trauma is certainly the outstanding causative factor.

In 1924 Rienhoff[8] reported a series of cases of congenital arteriovenous aneurysms. There were in this series six undoubted cases with fistulous communication between the larger trunk line vessels. One each of this kind had previously been reported by Hewitt[4], Von Eiselsberg[20] and Halsted[21]. There were two not reported at that time, but operated upon by Reid[9] and since reported by him, and another case of congenital arteriovenous aneurysm which has been reported by Lewis[22]. In my study of the reported cases in the literature at that time I was able to collect, including those cited above, in all nineteen, six of which were undoubted cases and thirteen probable cases of congenital arteriovenous aneurysm.

Also experimental work on the area vasculosa of the chick was reported and in this area an embryonic arteriovenous fistula was produced by Sabin. Ample opportunity for the development of abnormal arteriovenous communications was demonstrated by reference to the development of the subclavian artery and vein of injected specimens of the pig embryo by Wollard, and attention was directed at that time to the fact that it was quite remarkable that the persistence of embryonic abnormal arteriovenous communication did not occur more frequently. The embryo revealed many communications between the internal carotid and the anterior cardinal veins. There were throughout the embryo numerous anastomosing channels between arterial and venous trunks.

As mentioned before, congenital arteriovenous fistula is a very rare condition but a definite clinical syndrome which has in the past been misunderstood and classified in a vague manner and by an uncertain, indefinite nomenclature. It would seem that there are two outstanding general types, depending entirely on the anatomic structure of the anastomosing vessels. One type is that in which there is a lateral anastomosis formed by small vessels communicating between an artery and an accompanying vein, without interrupting the continuity of either of the main vessels. In the other type there is more of a direct, or end-to-end, anastomosis between one or more arteries and a plexus of large venous sinuses, in which the continuity of one or both vessels is interrupted in the formation of the anastomosis. There will always occur cases intermediate between these two distinct types, and no sharp classification will suffice to include the numerous anomalous conditions which it would be possible to have formed in the development of the blood vascular system. Nevertheless, it would seem that these cases represent two distinct types and that other cases of congenital arteriovenous fistula will approximate one or the other. The clinical manifestations of these two types are practically the same with the exception that there seems to be a much more rapid progression of the dilatation of blood vessels in the immediate environment, when the end-to-end type of fistula, rather than the lateral, is present.

The terms employed in the description of these congenital abnormal arteriovenous aneurysms are misleading and unintelligently used. If the congenital aneurysmal tumors are classified in regard to their etiology, and thus the type of vessels composing them, under three main headings, such as (1) congenital venous aneurysm, (2) congenital arterial aneurysm and (3) congenital arteriovenous aneurysm, a very simple and easily understood nomenclature will be instituted. Any one of these three can be modified under such headings to suit any given case. The capillary tumors could be left under hemangiomata, cavernous and teleangiectatic, as they are at present classified by pathologists. Nevi have been defined by MacCallum[23] and others as tumors of epithelial origin, containing pigmented cells called nevous cells. These may at times be somewhat vascular but never to the extent of an aneurysmal tumor, so that it is incorrect to speak of a pulsating nevus, or refer to a hemangiomatus tumor as a nevus. The terms, aneurysm by anastomoses and cirsoid aneurysm, have been so loosely used that any number of different blood vessel tumors have been described under those headings, so that their meaning today has very little significance and they are not satisfactorily defined in any textbook on medicine, surgery or pathology.

Dandy[24], in a classical contribution on arteriovenous aneurysms of the brain, points out: "To arteriovenous aneurysms of traumatic origin have since been added a great group with precisely the same clinical features but in which the characteristic vascular changes have been present since birth." Arteriovenous fistulae of traumatic origin are practically impossible in the brain because the principal arteries and veins are not in juxtaposition as are the vessels of the head, neck and extremities. He does not include in this series arteriovenous fistulae of the internal carotid artery and cavernous sinus.

He was able to collect twenty-two cases of congenital arteriovenous aneurysms of the brain from the literature and in addition reports eight cases which have come under his care in a series of 600 cases of brain tumor, an incidence of 1.33 per cent.

The production of arteriovenous aneurysms by spontaneous rupture of an arterial aneurysm into a nearby vein is not uncommon. Most of these have occurred between the aorta and vena cava, the pulmonary artery or the heart. Reid[9] cites a remarkable case of Riehm[25], one of spontaneous bilateral pulsating exophthalmos, following influenza. Inflammatory and mycotic aneurysms of peripheral vessels may also occur, especially in endocarditis lenta. Cases of spontaneous arteriovenous aneurysm have been reported by Pepper[26], Kaufman[27], Humphrey[28] and others.

PATHOLOGY AND PATHOLOGIC PHYSIOLOGY OF ABNORMAL ARTERIOVENOUS COMMUNICATIONS

As shown by Reid[9], Holman[29], Dandy [24] and Rienhoff[8], there is a complete similarity between the clinical and pathologic manifestations of the acquired and congenital arteriovenous fistulae, except that in the acquired cases there occurs an enlargement of the heart that is not observed in the congenital ones. Otherwise the cases are precisely the same in all their signs and symptoms.

THE EFFECT OF AN ARTERIOVENOUS FISTULA ON THE BLOOD VESSELS, HEART AND OTHER STRUCTURES

There is a marked proximal dilatation of the artery in which a fistula has occurred, whether this fistula be acquired or congenital. This proximal dilatation was first described by Hunter[2] in 1762, later by Broca[30] in 1863, and since then by many observers, including Osler[31] and Matas[1]. However, the fundamental cause of the proximal dilatation, although postulated by some observers, was first scientifically approached by Halsted.[5, 32] His particular interest in arteriovenous aneurysms lay in the proximal dilatation of the artery. He felt that the dilatation of the artery which is (1) distal to a partly occluding band, (2) beyond the site of coaptation in cases of congenital stricture of the aortic isthmus and (3) distal to the constriction of the subclavian artery by a cervical rib will be found to have the same cause as that central to an arteriovenous aneurysm. The cases showing proximal dilatation of the artery collected by Halsted were reported by Callander.[5] In 447 cases there were 57 instances or 12.7 per cent. However, as pointed out by Holman,[29] the most significant fact about these figures is that they show how poor the clinical observations were in many of the cases and also the clinical records.

Halsted's[32] studies stimulated the excellent researches of Reid[9] and Holman.[29] Reid was the first to produce experimentally in a dog an enlargement of the artery proximal to an arteriovenous fistula, and also an hypertrophy and dilatation of the heart with an increase in the heart shadow. Since then Holman's[29] admirable and most thorough experimental and clinical investigation has proved conclusively that dilatation of the proximal artery occurs, with very few exceptions, and in experimental animals depends on the location and size of the fistula, appearing more quickly and progressing more rapidly the nearer to the heart the fistula lies, and the larger the vessels abnormally connected; further, that in those animals in which proximal dilatation of the arteries has occurred there is a concomitant hypertrophy and dilatation of the heart. Holman[29] is of the opinion that this enlargement of the heart and artery is due to the handling of an increased volume of blood flow.

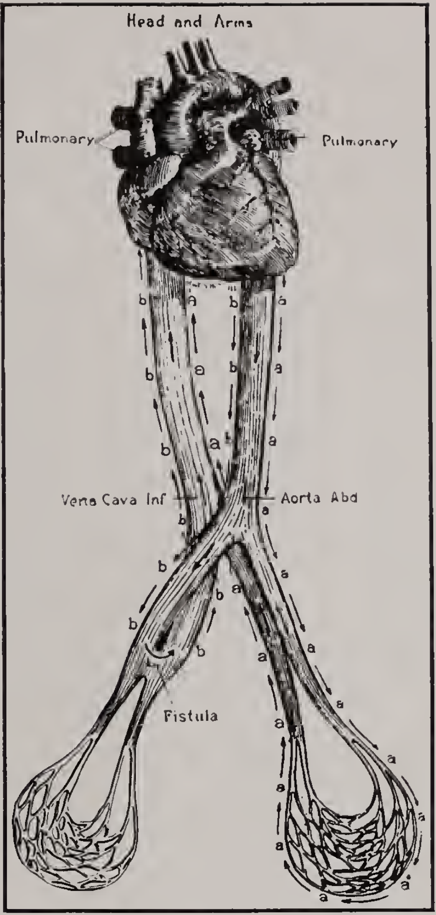

Fig. 1. Schema of circulation following production of arteriovenous fistula.

The resistance offered to the flow of blood through the system "b" depends on the limited distensibility of the artery, vein and fistula, plus the size of the fistula. As soon as the resistance through system "b" is equal to that of "a" the two systems are in equilibrium. Then the volume of blood flowing through the fistula will no longer increase and the total blood volume remains constant. The size of the fistula is the more important factor in producing proximal dilatation of the artery and heart. Duration, of course, also has a distinct bearing on the extent of dilatation. Reid[9] is of the opinion that, in addition to the physiologic dilatation due to the increased volume of blood flowing through system "b," there is also an increase in diameter of the vessels due to degenerative changes in the walls of the proximal arteries (fig. 1).

Reid[9] has pointed out the marked degeneration that occurs in the arteries proximal to an arteriovenous fistula, not only in clinical cases but also in experimental animals. The walls become thin, muscle layers atrophy, and the amount of elastic tissue becomes less. These changes were similar to those found by Halsted[32] and Reid occurring in an artery distal to a partially occluding band, and in the subclavian artery distal to a cervical rib. These degenerative changes are no doubt responsible for the thin walls of the large arteries which has often been observed, especially in cirsoid aneurysms where rupture of these vessels is not uncommon, and also for the not infrequent presence of an arterial aneurysm in the artery proximal to the arteriovenous fistula. The cause of this arterial degeneration probably lies in the change in the normal pulse pressure. The artery distal to the fistula is usually contracted and atrophied. This is probably a disuse phenomenon to a certain extent.

In some cases reported by Callander,[5] Curtis[33] and Reid[9] the distal artery was dilated but this condition is uncommon. The dilatation in these cases may have been present before. An ever increasing dilatation of the vein in the region of an arteriovenous fistula is one of the most constant features of this type of aneurysm. There is a pronounced dilatation of the affected vein both proximally and distally with a marked increase in venous pressure distal to the fistula. The increase in the amount of blood flow in the vein, together with the marked increase in the venous pressure due to the influx of arterial blood, and the consequent obstruction to the return flow of the column of blood distal to the fistula readily explain these venous changes. The veins distal to the fistula often become tremendously dilated, resulting in such a stasis of blood that a pigmentation and ulceration of the skin often occurs. Microscopic examination of the proximal and distal vein by Reid demonstrated a marked increase in the thickness of the wall of the vein proximal to the fistula. Distally the vein was quite thin and the elastic tissue less prominent.

THE EFFECTS OF ARTERIOVENOUS ANEURYSMS ON THE HEART

In acquired arteriovenous fistulae both clinically and experimentally there frequently but not invariably occurs an enlargement of the heart. This casual relation between an arteriovenous fistula and an affection of the heart has been called to the attention of the medical profession mainly through the writing of Halsted,[5,39] Callander,[5] Matas,[1] Reid[9] and Holman[29]. Reid[9], as mentioned above, was the first to show experimentally that the heart enlarged secondarily to an arteriovenous fistula. Holman also proved experimentally and clinically that the heart enlarges following the production of a fistula between an artery and a vein, and decreases in size when the fistulous communication has been corrected and obliterated. This enlargement is not seen in congenital cases and also is absent in those cases in which there is no proximal dilatation of the artery. Holman is of the opinion that the cardiac hypertrophy and dilatation is due to the increased work attendant upon the fistula. This is certainly a plausible explanation. Added to that there are the evident changes of nutrition demonstrated in the proximal artery which it is only logical to assume also affect the heart. The mechanism producing the changes in the heart is still indefinite.

EFFECTS OF ABNORMAL ARTERIOVENOUS COMMUNICATION ON THE PULSE RATE, BLOOD PRESSURE AND VENOUS PRESSURE

That closure of the fistula temporarily or permanently results in a marked decrease in the pulse rate was first reported in 1890 by Branham.[34] Since that time this phenomenon has been recognized by many observers. Lewis and Drury[35] have shown conclusively that the drop in pulse rate is vagal in origin, as this recation is abolished by atropinization. It has also been observed by them that an open arteriovenous fistula is associated with the characteristic signs of aortic reflux in the systemic arterial system, namely, low diastolic pressure, large pulse pressure, water hammer and collapsing pulse, capillary pulsation and a difference in arm and leg systolic pressures. The rise in pulse rate in cases of arteriovenous fistula may be attributable to a mechanical increase of blood to pump through the system or to a loss of vagal tone consequent upon the fall of mean arterial pressure. The systemic venous pressure is not raised. On closing the fistula there is an elevation of systolic pressure, but also a greater rise in diastolic pressure to a normal level. Therefore a fall in pulse pressure.

The surface temperature of the skin in the immediate vicinity of a fistula is increased but is decreased distal to the communication. Arteriovenous communication present before ossification will often lead to an abnormal increase in the length of a bone, due probably to the increased blood supply to the bone before the epiphyses were ossified. Reid[9] cites an extraordinary case of venous angioma which was accompanied by an underdevelopment of the afflicted leg with a resultant shortening.

MISCELLANEOUS AND INTERESTING SEQUELAE OF AN ARTERIOVENOUS FISTULA

Bone and calcium deposits about the fistula and in the walls of the sac have been frequently observed, also concomitant nerve injuries, especially in fistulae involving the subclavian vessels. Reid[9] calls attention to a glove anesthesia associated with paresthesias and paralysis of the hand and arm, and is of the opinion that much of this may be the result of irritation of the perivascular sympathetic nerves due to the fistula. Marked edema of an arm or leg may occur distal to the fistula. Hemorrhage from ulcers of a distal part is not uncommon. In the intracranial arteriovenous fistulae the existence of a space-occupying lesion is well shown by ventriculography, as pointed out by Dandy.[24]

SYMPTOMATOLOGY

The signs have been discussed and to a great extent the symptoms depend upon the location of the fistula's communication. In Dandy's[24] discussion of the arteriovenous aneurysm of the brain he points out that they are similar in their pathologic physiology to arteriovenous fistulae elsewhere, but call forth especial symptoms because of their proximity to the brain. He states, "the symptoms were fairly uniform and characteristic. Jacksonian convulsions, followed by transient loss of sensation or motor power in the part affected by the convulsion, and a gradually progressive sensory or motor hemiplegia on the affected side are the symptoms common to most of the aneurysms affecting the cerebral hemispheres. The symptoms are usually of many years duration, often beginning in childhood and continuing into adult life; again, they frequently do not begin until after the thirtieth or fortieth year. General pressure symptoms similar to those of tumor do occur but in a minority of cases. Cerebral hemorrhages occur in 40 per cent of the cases and is the principal cause of death."

In fistulae of the brain and also of the peripheral vessels headaches, dizziness, humming of the machinery murmur and continuous thrill with systolic accentuation are frequently complained of by the patient. Not uncommonly there is diplopia, ophthalmoplegia and exophthalmos. Paralysis of the sixth nerve often persists after a cure of the intracranial arteriovenous aneurysm. Palpitation, hyperpnea and throbbing of the involved vessels are often noted by the patient. Holman[29] has demonstrated experimentally that the magnitude of the bruit and intensity of the thrill in arteriovenous fistula depend on the size of the fistula and the free return flow of blood to the heart. Both thrill and bruit disappear on closure of the vein proximal to the fistula. Holman believes the increase in blood volume is responsible for the compensatory adjustment that follows the introduction of a fistula.

That an arteriovenous aneurysm is the greatest stimulation for the development of a collateral circulation has been beautifully shown by Reid[9] and Zinninger. An arteriovenous fistula was produced between the femoral artery and vein of a dog on one side, while the femoral artery was ligated on the opposite side. An injection was later made into the aorta. The side upon which the collateral circulation was the greater was the one on which the arteriovenous fistula had been produced.

TREATMENT

The treatment of an abnormal arteriovenous communication varies to a great extent in different types of cases and also upon other factors, among which are the location of the fistula and its duration. Osler, Makins, Reid and others have reported cases which have, under rest, immobilization, and light local pressure, healed spontaneously, but these are rare indeed. However, as all who have produced this lesion in dogs realize, it is quite difficult and more frequently impossible to prevent femoral fistulae from healing spontaneously. Therefore, in all cases at least six months of close supervision should intervene between the production of a fistula and an operative attempt to cure it. During this interval conservative and conducive measures toward healing should be employed, such as complete rest in bed and all measures which will tend to diminish the flow of blood to a minimum, thus preserving the heart as much as possible and perhaps keeping down to a minimum the increase in blood volume. Also, this gives ample time for the restoration of the tissues about the fistula to normal, i.e., absorption of edema, absorption and organization of the extravasated blood, healing of the primary wounds, the autosterilization of the tissues and the regeneration of blood lost. However, last and of the greatest importance, the interval of rest permits of a development of a collateral arterial circulation, on which the surgeon may have to depend in case a ligation of the trunk line artery is necessary for the cure of the fistula.

In a few cases as a result of infection and an ever increasing hematoma, gangrene of an extremity may supervene and necessitate amputation. Again, an immediate operation may be necessary because of a slow hemorrhage, producing pressure by hematoma formation which must be evacuated. Thus, occasionally surgery must be resorted to at once, although this should be the exception and not the rule.

Usually arteriovenous fistulae run a very chronic course excepting those spontaneous cases between the larger vessels, such as the aorta and vena cava. Most of the cases are from five to forty years duration. It would seem the older the individual when the fistula occurred, the greater the difficulty of adaptation. In the congenital cases the circulatory balance is well established and the prognosis far better than in acquired cases. In the latter the prognosis is dependent entirely on the size of the vessels involved, the diameter of the fistulae between them, and the portion of the body in which the vessels are located.

It has been noted repeatedly that involvement of the large vessels of the arms, neck and head are less injurious to the patient than those below the bifurcation of the aorta and, as pointed out by Reid[9], "peripheral lesions, such as the so-called cirsoid aneurysms, are well tolerated by the body except when they give rise to local disturbances, such as ulceration or hemorrhage." The life of the individual is indeed shortened in the great majority of instances in which arteriovenous fistulae occur because sooner or later cardiac complications arise which, if allowed to progress, become irreparable. Arterial degeneration results in increased danger of hemorrhage. In Dandy's cases 40 per cent died of untimely cerebral hemorrhage. When this occurs, not infrequently an arterial aneurysm develops in the proximal artery. It is, therefore, evident that arteriovenous aneurysms cannot be disregarded for, besides undoubtedly shortening the patient's life, there is the constant menace of hemorrhage, not to mention the extreme weakness and increased susceptibility to fatigue.

OPERATIVE TREATMENT

As in the case of most surgical procedures, different methods have been used from time to time by various surgeons. The Hunterian or proximal ligation, except in intracranial aneurysms, is definitely to be condemned. Proximal ligation of the artery not only fails to cure the aneurysm because of the extensive collateral circulation, but also results frequently in gangrene of the part, as the circulatory balance is completely upset. The blood flowing into the artery as a result of the collateral circulation is shunted back through the fistula and the part distal is deprived of its blood supply.

Double ligation of the artery proximal and distal to the fistula was first done in 1843 by Norris[38] and, although to be preferred to single proximal ligation, should not be used because of the same reasons, as the danger of gangrene by the use of this method is hardly less than in the case of proximal ligation. Often large collateral branches carry the blood through the fistula and then deprive the capillaries.

Quadruple ligation. Ligation of both artery and vein proximal and distal to the fistula has been widely employed and attended with the highest percentage of cures, as well as the lowest percentage of gangrene. As Makins suggested, the branches arising from the fistula-bearing segment of vessels included between the ligatures should also be ligated. If, depending on the case and the situation, excision of the aneurysm is feasible after quadruple ligation, this is considered the procedure of choice. Restoration of the continuity of the vessels by end-to-end or lateral suture is in some instances the method to be preferred, as also may be said of ligation of the canal of communication. This is particularly true of the treatment of those fistulous communications occurring between the carotid artery and jugular veins. The chief objections to this method are the difficulty and danger of suturing diseased arteries and veins. As Reid states, "the possibility of air and blood emboli, when these large dilated vessels are opened and restored under a tourniquet, is a real danger," citing a fatal case of Heuer's from pulmonary infarction.

For the intracranial fistulae Dandy suggests two procedures: (1) Ligation of the efferent arteries with or without excision of the mass of vessels, (2) ligation of the internal carotid for cerebral aneurysm and of the vertebral for cerebellar aneurysm. Reid's[9] idea of ligating the external carotid and placing a band on the common carotid together with ligation of the internal jugular vein would seem to me to be the operation of choice for arteriovenous fistulae between the internal carotid artery and the cavernous sinus.

I again want to call attention to the fact that in operating upon the congenital arteriovenous fistulae one must expect to find multiple fistulous communications. All of these fistulae must be exposed to obtain a cure of the aneurysm. The cessation of the dilatation of the artery and the return of its diameter to normal is probably the best indication that one is beyond the last communication. Sometimes even this observation is misleading, as shown by the case of Halsted and Reid, where at the second operation there was a progressive dilatation of the artery, due to an unopened fistula at the time of the first operation. There was no way possible of knowing of the presence of this fistula at the first operation. As in all surgical operations, there is not one type of procedure that has ever sufficed for all cases, and in the surgery of the blood vessels the greatest versatility should be employed.

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ROUTINE ROENTGENOLOGY OF THE NASAL SINUSES*

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In using the phrase "routine roentgenology of the nasal sinuses" I have in mind the routine use of the x-ray not only in every case presenting nasal symptoms but also in every case regardless of nasal symptomatology, in which foci of infection are suspected as a cause of local or systemic disease.

It is manifestly out of the question, however, to make a complete x-ray examination of the nasal sinuses in all these cases. To gain all the information available by this means would involve the making of six or seven views, frequently stereoscopic films, and occasionally include the use of the lipiodol displacement method. On the other hand, is is highly desirable that the additional information that only the x-ray can give be routinely secured as a supplement to the ordinary rhinologic examination. This is especially needful as applied to the posterior ethmoidal and sphenoidal cells, owing to their remote position and the frequent absence of abnormal physical findings even in the presence of disease.

Aside from the additional and often unexpected information thus obtained which is the main consideration, this routine use has other advantages to both physician and patient. In the matter of expense, by prorating the overhead among the greater number of examinations, the less the cost to each patient need be, and again, the constant correlation of physical findings with the x-ray film brings increasing value of opinion to each succeeding patient.

Methods to make such a routine use feasible must necessarily be relatively simple, quick and inexpensive and yet be reliable and sufficiently comprehensive to cover all the sinuses. At the present time there is probably no means by which all these requirements can be successfully met. However, I believe the procedure and positions advocated by Granger of New Orleans are fairly adaptable to such routine purposes and give the maximum information in proportion to the time and effort expended. Following his technic, films are made of the head in two posteroanterior positions, employing in one the commonly used twenty-three degree angle for the maxillary, frontal and anterior ethmoidal sinuses, in the other a reverse seventeen degree angle, that is, with the apex of the angle block away from the head, for the posterior ethmoidal and sphenoidal cells. This latter is original with Granger and is well known as the Granger position. The ray is vertical and is centered through a point midway between the eyes in the first instance and a point midway between the external auditory meati in the second.

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Although the frontal and maxillary sinuses may be shown more advantageously in views made for each group alone, they are shown sufficiently well in this twenty-three degree view along with the anterior ethmoids to make this one film satisfactory for their preliminary study. These cells are relatively superficial, fairly accessible and diagnoses can be made with a reasonable degree of certainty. It is around the posterior cells that most of the difficulty centers from both the clinical and x-ray standpoints. The reverse seventeen degree or Granger position is designed for the study of this region and, while the views thus obtained are of immense value, they are not self-explanatory and require some knowledge of the fundamental principles underlying Granger's work in this connection for satisfactory interpretation.

The arguments for these positions and the above procedure were advanced by Granger first in 1923 and later in succeeding publications. He pointed out, first, that in order to satisfactorily study the x-ray shadows of the nasal sinuses, it is necessary to find some means by which successive films, similar in appearance, and constantly showing the same landmarks can be made. The duplication of films of even the same individual is not easy to accomplish; in fact, almost impossible unless some means of maintaining exact angulation of the head is observed. The use of the nose as a resting point, as in the nasomental and nasofrontal positions, results in a varying angle. By eliminating this variable factor, the nose, and using the frontal and superior maxillary bones as resting points, the results are found to be satisfactorily constant, and any number of successive films can be made, showing the same markings. This is accomplished by means of the Granger sinus mask, well known to all of us, having an aperture for the nose.

Again he pointed out, because of their close clinical and anatomic association it is advisable to study the sphenoidal and ethmoidal groups, not singly, but in their relationship to each other, particularly their relative location on films made at various angles. In all posteroanterior views at whatever angle these three cell groups are more or less superimposed in the same plane. Posteroanterior views, made with the head lying flat or in the horizontal plane, show the sphenoidal and both anterior and posterior ethmoidal cells almost entirely superimposed. The shadows of these three groups tend to become separated directly in proportion to the increase of the angle at which the film is made. This is true even beyond the twenty-three angle in my own observation. Regardless of this, however, the sphenoid is projected relatively the lowest, and the anterior ethmoidal cells the highest in the twenty-three degree view. It is in this view that the anterior ethmoidal cells are shown to the best advantage.

In the Granger or reverse seventeen degree position the sphenoid is projected to its highest point above the ethmoidal cells which again, at this angle, are almost entirely superimposed. In spite of the overlapping of these cells in this view Granger has shown that there are certain definite landmarks which are exceedingly useful as a basis for interpretation of this region. The marking of greatest importance in this latter film is what is known as the "G" or Granger line, a curved line, convexity upward, extending through the lower part of the frontals between the orbital margins. This represents the superior border of the sphenoidal sinus. A second line, known as the "C" line, extends on each side from the superior border of the orbit, with which it merges, toward the midline, and while really a projection of the orbital plate of the frontal bone, has been found to mark the superior border of the posterior ethmoidal cells.

The interpretation of sphenoidal conditions according to Granger depends on the appearance of this "G" line and the region immediately below it as far as the "C" line. For dependable interpretation of this region, however, it is absolutely essential that the seventeen degree angle be exactly maintained, so that the shadow of the petrous portion of the temporal bone be projected through the orbits. Slight variation either way will either render this line invisible or so shorten it as to reduce the area of the sphenoid visible.

Some of the criteria for the interpretation of this line, according to Granger are, first, in the normal sphenoid the line is clear-cut, distinct and clearly visible. In hyperplastic inflammation the line is broadened and rendered less distinct. In osteoplasia it is broadened and of greater density. In empyema or neoplasms of the sphenoid the line is obliterated. The obliteration of this line has been explained by the gravitation of fluid contents to the roof of the sphenoid, when the head is placed in the dependent seventeen degree position.

It might be going too far for most of us to attempt to pick out these fine points as does the originator of this method, and diagnose the particular type of pathology present, yet we can at least be reasonably certain that a clear-cut "G" line means a normal sphenoid, that indistinctness or blurring of the line even for short spaces, particularly if accompanied by an increase of density below the line, means probable abnormality, and that absence of the line in a properly taken film definitely indicates disease. In this connection it might be said that the suggested routine x-ray examination is equally important from a negative as from a positive standpoint. When, however, the x-ray evidence of disease on these routine films is not sufficient to be conclusive and yet suspicion of disease exists, it is essential that supplementary views be made in other directions, other positions and if need be other methods employed, until sufficient evidence is obtained to reach justifiable conclusions.

Whether this procedure just described or some other individually satisfactory method be followed, it is certain that the systematic routine use of the x-ray will uncover areas of infection previously unsuspected. It is equally certain that the value of such systematic examination will be further enhanced by the use of standard positions. The comparison of a film with numerous other films made in identically the same way necessarily results in a significance and meaning from an interpretative standpoint that can never be attained in films, however good they may be individually, that are taken at random or in even slightly varying positions.

To summarize. In order to avoid overlooking foci of infection not revealed by ordinary search, a routine x-ray examination should be made a part of the general examination of the nasal sinuses. Further, when some such simple examination as the one suggested is not final, supplementary exposures should be made, sufficient to establish a diagnosis. It is essential to have the information revealed by the radiogram, not alone for diagnosis, but as a guide in advising the best method of treatment, whether operative or nonoperative and, if the former, to plan the extent of advisable interference.

ACUTE MAXILLARY SINUSITIS *

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It is the purpose of this paper to discuss acute maxillary sinusitis in some detail, and to present the writer's opinions as to the diagnosis and treatment of this disease, as drawn from the observations of over one hundred cases during the past two years. In order to do this and at the same time keep the length of the paper within reasonable limits, it is necessary to disregard the other sinuses and consider acute maxillary sinusitis as though it occurred by itself, realizing, of course, that in many cases two or more sinuses are simultaneously infected. Also, for the sake of brevity, the usual type of text-book description will be dispensed with and only those points discussed which are considered of practical value and which bear directly upon the diagnosis and treatment of the condition. No attempt will be made, then, to describe the anatomy of the maxillary sinus.

The maxillary sinus commonly becomes acutely inflamed by a direct extension of infection from the mucous membrane of the nose during the course of an acute rhinitis or common cold. Undoubtedly every acute rhinitis of any severity produces some change in the lining membrane of the antrum, but this change is usually not of sufficient degree to give any symptoms or to be classed as a sinusitis. However, if radiograms are taken of individuals suffering from acute colds, it will be found possible to demonstrate the shadow cast by the thickened lining membrane. Irrigation of such sinuses will reveal no macroscopic pus or mucus, but a few cells may be found microscopically in a centrifuged specimen. Radiograms taken after the cold has subsided will show that the thickened lining membrane has disappeared and the sinus is clear. Strictly speaking, such a change in a sinus during the course of an acute rhinitis constitutes an acute sinusitis, but for the purpose of this paper such symptomless conditions will be disregarded and an acute sinusitis considered to be one in which there are symptoms present and where either a marked thickened lining membrane or macroscopic exudate is found on irrigation.

A consideration of the pathology of acute maxillary sinusitis will bring us to a consideration of the

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lining membrane of the antrum. This, you will remember, consists of a thin mucous membrane with a surface layer of ciliated epithelial cells resting upon a basement membrane; below this a subepithelial layer, containing blood vessels and glands, this layer blending into the periosteum. The groups of glands seen scattered here and there are not as numerous as in the mucous membrane of the nose proper.

The pathologic changes in the lining membrane of the acutely infected sinus follow in a general way the changes noted in acute inflammation in any other tissue. With the beginning of the infection comes a hyperemia and swelling, due to exudation of serum into the subepithelial tissue which brings the membrane to many times its normal thickness. A marked leucocytic infiltration is seen and sometimes petechial hemorrhages. The epithelium does not usually desquamate in an acute inflammation, except, perhaps, in small areas. It is not infrequent, however, for the cilia to lose their power of motion and it is probable that this plays an important role in the course of the disease by affecting the ease with which the sinus may empty itself. This point will be discussed more fully later. The inflammatory exudate is at first serous, may become serosanguinous, then becomes mucoid and later is usually mucopurulent. An exudate consisting of pure pus is not commonly found in the acute cases.

The majority of cases of acute maxillary sinusitis seen by the writer gave mainly or solely local symptoms. It is well to remember, however, that patients are seen who give evidence of general systemic disease with little or no symptoms of antrum infection, where an acute maxillary sinusitis is found to be the etiologic factor. These are the so-called "silent infections of the antrum," although careful history usually elicits some symptoms, such as "cold lasting for two weeks," which give a clue to the antrum disease. Such conditions as bronchitis, bronchopneumonia and acute glomerulonephritis have been reported in this connection.

Let us at this point, while considering symptoms, emphasize the relationship between the common cold and acute maxillary sinusitis. Infection of the antrum must be suspected in every case in which a common cold continues beyond its normal duration without getting well. These are cases which sometimes go undiagnosed and they should not, for if the sinus is suspected, it is a relatively simple matter to prove its innocence or guilt.

Of the local symptoms complained of, pain is not usually so predominant in acute maxillary sinusitis as it is, for example, in acute frontal sinusitis. Pain, when present, is often over the antrum, but it may be localized entirely supraorbitally so that the condition simulates frontal sinusitis. Given, in such a case, an absent or small frontal sinus which transilluminates poorly and some confusion may result. The pain about the antrum is frequently of a neuralgic character, but should not be pigeon-holed in that most convenient classification until the question of sinus infection has been very definitely ruled out as a posible factor. A vague ache, numbness of the cheek or a feeling of distention and pressure are sensations more commonly complained of than outright pain. Unpleasant sensations in or above the teeth and sometimes pains or aches in this region are quite frequent. Two patients in this series consulted us after having had teeth extracted in an effort to stop one of these pains.

Since acute maxillary sinusitis often complicates an acute rhinitis, the aggravation of any or all of the rhinitis symptoms may be an indication of sinus involvement. Quite a number of patients have presented themselves complaining of dizziness. This dizziness is more or less constantly present with waves of increased severity sufficient to cause staggering. The first irrigation of the antrum often relieves this symptom entirely.

No attempt will be made here to give a detailed description of what may be seen in the nose on examination, but certain points of interest which are often found may be considerde. The secretion in the average case is apt to be profuse and will often be seen in the middle meatus, perhaps running down over the inferior turbinate; and is most commonly mucopurulent in character, as has been stated. It is quite possible, however, to find no secretion at all in the nose. This will occur in those cases where the ostium has been closed by swelling of the lining membrane, but may also occur in cases which are draining freely.

As has been brought out by Proetz, the movement of a thick stream of exudate with a high viscosity through the ostium of a sinus cavity is like the movement of a semisolid rather than a liquid. The exudate having sufficient viscosity to remain in one mass rolls out through the ostium (assisted by the action of the cilia and possibly the suction caused by the patient blowing his nose) and is deposited in the nasal chambers and then blown out by the patient. Examination for some time following this occurrence will reveal no secretion in the nose, but the patient usually notes and reports this intermittent, copious discharge. It is also well to remember that secretion from the antrum is not always seen running downward and along the proper pathways. It may be disseminated by the patient's efforts to clear his nasal passages or, if the middle turbinate lies close to the septum, the secretion may run upward by capillary attraction and be seen between the middle turbinate and the septum, apparently coming down from above.

Further information will be obtained in the diagnosis of acute maxillary sinusitis by transillumination. This is a most valuable procedure which is undoubtedly not used sufficiently often by physicians in general. Like any other diagnostic procedure, one becomes skilled in its interpretation only by constant use, but being simple and easy to use there is no reason why it should not be an office routine. Illumination may be made by placing the lamp in the mouth or by placing it infraorbitally, having the head back and the mouth open. Both methods should be used in each case, further comparison being made by diminishing and increasing the brilliance of the lamp and by turning it off and on. Unilateral antrum disease will usually show up quite plainly; bilateral disease, with the element of contrast lacking, will be more difficult.

The radiogram will give positive diagnosis in most cases of acute maxillary sinusitis. Although its routine use may be felt to be impractical in the average run of acute cases because of the expense, the writer feels that the valuable information obtained justifies some sacrifice and makes a practice of radiographing every case of acute sinusitis.

A discussion of x-ray interpretation in maxillary sinus disease would make a paper in itself and cannot be gone into here in detail, although time may be taken to urge physicians to make arrangements to use the x-ray more freely and to emphasize the desirability of having the physician interpret his own roentgenogram. Accepting the written report of the roentgenologist amounts to requesting someone to make your diagnosis for you and sooner or later leads to disappointment.

We now come to a consideration of the procedure of puncture and irrigation of the antrum which, if positive, clinches the diagnosis of acute maxillary sinusitis and also begins the treatment. Here, again, as with transillumination and x-ray, a plea is made for the more frequent use of the antrum puncture, provided that certain precautions for the comfort and safety of the patient are observed. It is the writer's opinion that the site of election for puncture is in the inferior meatus as high up as it is possible to go beneath the inferior turbinate.

Insertion of a cannula through the normal ostium is impossible in about 50 per cent of cases, due to anatomic irregularities and to swelling in the middle meatus from the acute inflammation. When the normal ostium can be entered, satisfactory irrigation is often impossible, due to the tight fit of the cannula. Puncture in the middle meatus has the advantage of going through the thinnest portion of the wall, but is dangerous because anatomic variations make puncture into the orbit almost inevitable in some cases. Puncture through the inferior meatus need not be very unpleasant, if a sharp instrument is used and adequate anesthesia obtained.

If cocaine is used for anesthesia, less of the drug will be needed and better effect obtained with the use of the flakes on cotton moistened with adrenalin, than by using the solution. Let this be applied accurately to the small area to be punctured and left in place for at least fifteen minutes, as time is an important element in obtaining good anesthesia with cocaine. A patient having his antrum punctured is entitled to perfect anesthesia and will have it, if the cocaine is applied carefully and left in position for a sufficient length of time. Novocaine infiltration as recommended by Myerson is effective and does away with the possibility of unpleasant cocaine reaction. The use of a curved or straight trochar is optional with the operator, but one with a stilette will prevent the lumen becoming plugged with bone or tissue. Fluid should be injected before any air is used and the injection begun slowly and without force.

A great deal of information may be obtained as to the size of the antrum cavity, the degree of swelling of the lining membrane and the condition of the ostium, by the feel of the solution as it is injected into the antrum. The fact that no macroscopic exudate returns with the washing does not necessarily rule out the presence of an acute sinusitis. The antrum may have just emptied itself, as was mentioned previously in the paper. It is probable that this complete emptying is a combination of the method of drainage discussed and the activity of the cilia. If the inflammatory process is not sufficiently severe to stop the action of the cilia entirely, their action together with the viscosity of the fluid may empty the antrum completely. This is a good prognostic sign. If the cilia are paralyzed, it is improbable that the anturm can empty itself entirely and some exudate will be obtained on irrigation.

Those antra which are suspected of having emptied themselves may be reirrigated at a later date and will frequently be found full of pus. In early cases with swelling of the lining membrane but in which exudate has not yet formed, no macroscopic pus will be obtained on irrigation but the symptoms will often be completely relieved. If the irrigating solution returns clear, it may be set away for sedimentation or centrifuged and examined microscopically. If acute infection is present, evidence of it will then be found in the presence of leucocytes and epithelial cells.

The treatment of acute maxillary sinusitis consists fundamentally in the promotion of drainage. This is obtained by shrinking the nasal mucous membranes, particularly about the ostium, to facilitate the antrum emptying itself and by puncture and irrigation. The various mild antiseptic solutions usually used in the nose are, of course, in order. The principal reagents used for shrinking purposes are cocaine solution, adrenalin and ephedrine. Of these three, adrenalin has the most intense shrinking action, but has the objection of being followed by a vasodilation and congestion. The drug ephedrine is a most valuable addition to our armamentarium. It may be prescribed to be used by the patient more freely than cocaine and its action lasts longer than adrenalin and is not followed by a reaction.

Puncture and irrigation of the acutely infected antra is forbidden by some rhinologists on the ground that no sort of surgical procedure should be used in an acutely infected field. The writer feels that their objections are largely theoretical, as he has experienced no bad result in several hundred antrum irrigations. On the contrary, puncture and irrigation give the patient great relief and result in clearing up of the infection in a much shorter time than without it, as will be demonstrated strikingly if a number of control cases in a series are treated without irrigation. There must also be considered the danger of the acute infection continuing and becoming chronic. Irrigation should be done either daily or every other day until improvement is noted, after which the intervals may be lengthened. By reintroducing the trochar through the same opening the operation is simplified.

Difficulty will be encountered in the treatment of certain cases, where the antrum is found filled with pus under pressure but with the ostium closed so tightly that neither aspiration or irrigation is possible. In these cases a trephine opening has been made in the inferior meatus with Thornward's antrum trephine, through which a small cannula can be passed and the antrum irrigated. No undue reaction or evidence of infection of the tissues has been noted with this procedure and excellent results have been obtained in all cases. Filling the antrum with various antiseptic solutions after irrigation has apparently given no better results than simple irrigation.

SUMMARY

Acute maxillary sinusitis is a disease of frequent incidence, being usually a sequel to an acute rhinitis. It commonly gives local symptoms chiefly, but may bring on severe systemic disease with few local signs. Its pathology is characterized by inflammatory changes in the lining membrane of the antrum with the formation of an exudate which is usually of a mucopurulent character. The diagnosis of the disease is relatively not difficult, based upon examination of the nose and the findings on transillumination and puncture and irrigation of the antrum. The treatment consists essentially of the promotion of drainage by shrinking the nasal mucous membranes and the removal of exudate by puncture and irrigation.

(The bibliography, omitted for lack of space, will appear in reprints.)

NEUROARTERIOSCLEROSIS *

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Arteriosclerosis, when affecting the nervous system, presents many interesting phases. In 1922, McCallum[1], writing of general arteriosclerosis, stated that we were extraordinarily ignorant with respect to this common affection, but little of importance has been added to our knoweldge of the subject since that time.

ETIOLOGY

The etiology of arteriosclerosis is a subject that has attracted the pathologist and research man, and some of the possible factors are still debatable.

Age. In a study of 100 cases of arteriosclerosis[2] of the nervous system, I found that the average age of the patients when examined was 64.5 years, which closely approximated Woltman's average of 63 years in 146 cases studied. What is of more importance than the age when examined is the age of the patient when symptoms were first noticed. This had been recorded in 74 of my cases and averaged 60.9 years.

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Sex. According to Dercum, mental and nervous effects due to arteriosclerosis greatly predominate in the male, arteriosclerotic dementia, for instance, being quite rare in the female, while intermittent claudication is practically a male disease. In both Woltman's series and my own male arteriosclerotics predominated in the proportion of two to one.

Heredity. There is undeniably a distinct tendency in certain families toward early arterial degeneration, just as other families manifest a tendency to longevity, with late arterial hardening. Why this should be we do not know.

Hypertension. Persistent high blood pressure may lead to arteriosclerosis, or may be an effect of arterial hardening. Just as hypertension does not always indicate an arteriosclerosis, it does not follow that there is hypertension because there is arteriosclerosis. The average blood pressure in one hundred cases of arteriosclerosis was high, 177 systolic and 104 diastolic. The three highest pressures recorded were 280/120, 235/155, 230/140; the three lowest were 100/60, 110/80, 112/70.

Infections. In 1921, William Ophules[3] reported his study of the records of five hundred consecutive complete necropsies with reference to previous infections, determined by the clinical histories and careful anatomic study. The cases were divided into two groups, one in which all history or signs of previous infection were absent, and one in which such had been found. Chronic arterial disease was found to be almost entirely lacking in the first group but was frequent in the second.

It was further found that the connection did not hold in all infectious diseases, but was fairly confined to chronic septic (rheumatic) conditions. While some writers emphasize the etiologic relation between other forms of infection (typhoid, tuberculosis, syphilis) and arteriosclerosis, no evidence to that effect appears to have been submitted that has anything like the convincing weight of Ophules' report. I am myself skeptical of the importance attributed to syphilis in the etiology of arteriosclerosis. Syphilis is inflammatory and affects the media, while arteriosclerosis is degenerative and attacks the intima. Syphilis causes thrombosis, while arteriosclerosis leads to hemorrhage.

Intoxication. Alcohol and tobacco are usually mentioned as playing an important role in the production of arteriosclerosis, but this view is not held as much as formerly. In my experience, arteriosclerotics have used no more alcohol and tobacco than nonarteriosclerotic individuals. Is it not probable that the human race has acquired somewhat of a tolerance for these poisons?

Lead may have been a factor in four of my patients. Three were painters, one of whom had been twice treated for lead poisoning, and the fourth case, one of the most marked examples of arteriosclerosis I have ever seen, was a printer who for years had set type by hand.

Diet. Most writers consider that an excess of protein food in the diet is productive of arteriosclerosis. Mosenthal, however, holds that there is no definite proof that such is the case.

Ignatowski,[1] Newburg and Squier,[5] and Newburg and Clarkson[6] have produced arteriosclerosis in rabbits by a diet rich in animal protein, but do not assert that the abuse of protein causes human arteriosclerosis, as "the vascular system of omnivorous man may have acquired an insusceptibility to the products of protein metabolism, not possessed by the herbivorous rabbit."

Intramuscular exertion. There would seem to be no argument against the statement that continued hard physical work and exposure are contributing factors in the development of arteriosclerosis. The youngest marked arteriosclerotic I have ever seen was a blacksmith who presented arteriosclerotic dementia at forty-five years of age. A female having marked general arteriosclerosis and dementia was a Russian, who in her younger days had worked out in the fields with the men.

Occupation. Interesting only because of the variety represented.

SYMPTOMATOLOGY

In considering the symptoms of neuroarteriosclerosis we find that they may be referred to the peripheral nerves, spinal cord or brain, either singly or in combination.

Nerves. In old people there is occasionally found a multiple neuritis, not produced by any of the usual causes of neuritis and characterized by a gradual onset and insidious course, without acute symptoms.

The sensory symptoms are insignificant, chiefly paresthetic; motor paralysis is also slight, affecting the distal portion of the extremities. In advanced cases there is general sensory blunting and some muscular atrophy may be present. Senile polyneuritis was present to a considerable degree in 4 per cent of my cases, although many others complained of vague pains and paresthesias in the extremities. This form of neuritis was first described by Oppenheim in 1893.

Senile polyneuritis must not be confused with acroparesthesia, a vasomotor condition occurring chiefly in women about the menopause, with the neuritis of pernicious anemia, nor with that of diabetes.

Spinal cord. Spinal symptoms are more frequent in neuroarteriosclerosis than peripheral nerve symptoms, although not as common as cerebral symptoms. They were present in 21 per cent of the cases in my series. Some were spastic, some ataxic, but the combined cases (ataxic paraplegias) were in the majority.

The classic syndrome of spinal arteriosclerosis is the ataxic and spastic gait, slight urinary incontinence, Romberg sign and increased tendon reflexes; Babinski's sign is usually present. The so-called tabetic cases all have lost knee jerks and ataxia, with or without sphincter involvement.

In the series of one hundred cases, one presented the picture of a transverse myelitis, evidently the result of hemorrhage and one patient had the syndrome of amyotrophic lateral sclerosis. As this condition had not appeared until the patient was past seventy and had then progressed steadily in association with mild dementia, vertigo, an endocardial murmur, and a systolic blood pressure of 170, I felt justified in attributing the cord pathology to circulatory changes.

Some conditions from which arteriosclerosis of the spinal cord must be separated are spinal tumor, syphilis of the cord including tabes, and subacute combined sclerosis of the cord due to pernicious anemia. As this latter condition may present cord symptoms before the characteristic blood picture appears, it is well to remember that there is even a closer relationship between the combined cord sclerosis and achylia gastrica than between the cord change and pernicious anemia.

Spinal syphilis may present the same clinical picture as spinal arteriosclerosis, but the syphilitic patient is younger and the spinal fluid should give the characteristic laboratory findings.

Spinal tumor may occur at any age, but localizing signs and root pains from pressure should lead to careful investigation for a neoplasm.

Multiple sclerosis is essentially a disease of younger people but may appear sufficiently late in life to cause it to be considered as a diagnostic possibility. Recently I saw an arteriosclerotic presenting intention tremor, nystagmus, scanning speech and pallor of the optic discs.

Tabes may be simulated superficially by the ataxic gait and lost knee jerks, but the absence of the Argyl-Robertson pupil and lightening pains, together with the serologic findings, should make the differentiation easy.

Brain. Coming finally to cerebral symptoms, we find them multiform. Of these, vertigo is the most common single symptom, occurring in 46 per cent of my arteriosclerotics. Stein,[7] in a study of 1,026 cases, states that in the majority of arteriosclerotic patients the ear conditions overshadow pathologic conditions elsewhere, vertigo being usually the symptom for which the patients are sent for ear examination. Other symptoms referable to the auditory apparatus are tinnitis and impaired hearing. For a proper evaluation of this symptom, the hearing should be tested by an otologist to determine the nature of the deafness and its cause.

Headache is next in frequency to vertigo as a symptom of cerebral arteriosclerosis. This in its most characteristic form is present upon waking, gradually ameliorating as the patient is up and about.

Eye symptoms are frequent. The senile pupil is small and sluggish in reaction, and will be found in about 25 per cent of cases. Arcus senilis, while frequently found, is not as common as the characteristic pupil. Homonomous hemianopsia, found twice in one hundred arteriosclerotic patients, was evidently due to hemorrhage.

It is an axiom that retinal arteriosclerosis always means cerebral arteriosclerosis, although the latter may be present without the former. Among the ophthalmoscopic signs of arteriosclerosis are a narrowing of the arteries and a dilation of the veins, with irregularities in the caliber of the intima. The veins may show constrictions where they are crossed by the rigid arteries. The arteries may be unduly tortuous and present an excessive brightness of the light streak, the so-called silver-wire appearance. Miliary aneurysms may occur in the retinal arteries as well as in the cerebral vessels, and slight hemorrhages into the retina are occasionally seen. A corkscrew appearance of some of the smaller arterial twigs, especially in the region of the macula, is said to be one of the earliest signs of arteriosclerosis of the retinal vessels.

It is interesting to note that sclerotic radials were found thirty-four times and sclerotic temporal arteries sixteen times in one hundred cases, although we know that arteriosclerosis of vessels elsewhere does not necessarily mean that the cerebral vessels are sclerosed. The reverse is also true.

In addition to the transient aphasias and paralyses considered as being due to arterial spasm, arteriosclerotics are subject to apoplectic attacks. These were noted in one-fourth of my cases and are so familiar that we may pass on without further comment.

Epileptiform attacks in the aged are to me far more interesting. Occurring in about 12 per cent of arteriosclerotics, convulsive seizures are of themselves not of serious prognostic significance. Thus, the average number of years during which patients had been subject to convulsions when their history was taken was 6.9. One man of seventy had been having convulsions for thirteen years, one of sixty-nine for twelve years and one of sixty-four for eleven years. The average age of the patients when the convulsions first appeared was 54.9 years.

One very interesting case, seen in consultation with Dr. Epplen had a psychic epileptic equivalent.

Cerebral arteriosclerosis has its characteristic gait, differing from the abnormal gaits described under spinal arteriosclerosis. It is a peculiar stuttering or stammering gait, the patient walking stiffly, with short, irregular steps. This when once seen is not easily forgotten and is pathognomonic of cerebral arteriosclerosis.

Mental symptoms. As long as the mental symptoms do not obtrude to the extent of dominating the picture, we speak of the condition as the nervous form of cerebral arteriosclerosis, but if they dominate, then we speak of an arteriosclerotic psychosis.

Much confusion has existed in regard to the classification of the various mental states of the aged. Rhein, Winkelman and Patten reviewed 500 cases from an organic standpoint, selecting 100 as a basis for report; the vascular pathologic changes were carefully studied. They divided the cases into four groups. Group 1, with sclerosis affecting mainly the vessels of large caliber and showing gross areas of softening; group 2, with sclerosis mainly confined to vessels of small caliber and having microscopic multiple miliary areas of softening; group 3, large and small vessels about equally sclerosed; group 4, the vascular change being a fibrosis rather than a sclerosis. In the first group the neurologic and mental symptoms were of abrupt onset and inclined to be massive in character; in the second group the mental symptoms were of gradual onset and presented the typical arteriosclerotic psychosis, such patients usually being admitted to the psychopathic ward instead of the neurologic ward of the hospital. The fourth group was composed of the cases of general senility.

It may be in place here to speak of the selective action of cerebral arteriosclerosis. Two areas are most frequently affected, the region of the basal ganglia and the cerebral cortex. From the former we have the cerebral hemorrhages from the lenticulo striate artery with hemiplegia, and the paralysis agitans syndrome when the nuclei are affected; from the latter we have the mental changes.

Fundamentally, arteriosclerotic dementia and senile dementia are the same, characterized anatomically by diffuse reduction of the brain substance and symptomatically by the "organic psychic" complex. Common to both is amnesia for recent events, associated with a gradual impairment of attention and association of ideas. Irritability and emotional instability are present. In the arteriosclerotic psychoses there are also neurologic cerebral manifestations, as already described, and the psychical defects for a time are more or less irregular.

As the arteriosclerotic dementia increases, there is a general and progressive slowing of mental processes with a diminished capacity for mental effort and inability to acquire new facts or ideas. Accuracy is affected and judgment becomes impaired. The affect is disturbed and the patient becomes indifferent to relatives and friends. Orientation at first suffers only spasmodically, but finally is entirely destroyed. Apoplectic and epileptiform attacks occur, palsies set in and last the patient becomes incontinent, helpless.

Paresis, alcoholic Korsakoff psychosis, brain tumor and multiple sclerosis are conditions from which arteriosclerotic dementia must be differentiated, but should present no difficulty, if the case is studied with any care.

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EDITORIAL

ESSENTIAL HYPERTENSION

While one of the most common and familiar disorders, essential hypertension is one of the least understood. The etiology is unknown, although certain predisposing etiologic factors are recognized, as heredity, anxiety and emotional excitement, infections, endocrine imbalance (goiter and the menopause), and the older concept of beginning arteriosclerosis. The prognosis is difficult but more definite than the etiology. It is generally conceded that the diastolic pressure must be the basis of prognosis and that when this ranges from 120 to 140 or over quite constantly (malignant hypertension), together with the presence of retinal hemorrhages or tortuosity, the outlook is very unfavorable and a fatal ending may be expected within one to three years. The old rule that a systolic pressure of over 200 signifies renal disease must be abandoned.

How many mistakes in the prognosis of essential hypertension have been made only those can fully realize who have followed cases for a quarter century. Having acquired the first sphygmomanometer in Seattle about twenty-five years ago at the insistence of a patient from New York who had been under the care of a famous clinician, the writer began to learn something about blood pressure. This patient died quite recently in her eighty-eighth year, having survived a double pneumonia some few years before. She enjoyed her essential hypertension, which was moderate, until her death, as it was the source of much conversation and solicitude among her friends.

Some twenty years ago one of the today foremost clinicians prognosticated the death of a woman within three years, who at that time had a systolic pressure a little over 200 and a urine of low specific gravity, containing some hyaline and a few granular casts. Renal function and blood chemistry tests were not then available. This patient is in better condition today and has not developed renal disease, although she has had a marked hypertension ever since. She has had a labile essential hypertension as well as a generally low diastolic pressure. Both of these features we believe are most favorable in regard to prognosis. A labile or changing hypertension must assuredly cause less damage to the heart, blood vessels and kidneys than a uniform or stabile high blood pressure. A certain degree of lability or variation in blood pressure always occurs in health and is much more marked in essential hypertension. The low level of blood pressure happens in the early morning and the upper level is found in the evening. Thus, in the patient noted above we have determined the degree of hypertension for a period of twenty years and only in this way can a proper understanding of chronic disease be obtained, as was particularly stressed by Sir James Mackenzie.

The systolic pressure in this patient varied as much as 110 at times within twenty-four hours. For instance, on a recent occasion the systolic pressure in the early morning was 120; at 2 p.m. it was 140 and at 7 p.m. it reached 180. At times of excitement or fatigue, or from unknown reasons paroxysms of hypertension have occurred with a systolic pressure of 240 at night, falling to 130 the following morning, after the use of morphine subcutaneously for the relief of unbearable headache. At such times the diastolic pressure has risen to 120 at the height of the systolic reading but rarely has it exceeded the 100 mark.

Recently at the Mayo Clinic a similar study, only on a large scale, has been made by Drs. Mueller and Brown in sixty-one cases of essential hypertension with findings resembling our own. There was a variation of as much as 60 between the high and low levels of systolic pressure within twenty-four hours in many cases. The lowest level was at 4 a.m. and the highest at 7 or 8 p.m. In some patients a variation as great as 120 between the morning and evening systolic pressures was found. One patient with essential hypertension was studied for a period of three and a half years at Rochester. He took his own blood pressure during this time thrice daily. In addition to the diurnal daily variation just noted, it was discovered that there was a lowering of blood pressure in summer and an elevation in winter, while there was a greater difference between the morning and evening pressure in summer than in winter. Higher pressures were more apt to occur during week ends, when diversions coincided with emotional excitement and increased hypertension.

Our knowledge of the great variation in many cases of essential hypertension immediately suggests certain logical deductions. First and foremost it is evident that markedly labile essential hypertension cannot be due to the older concept of fibrotic, fixed, anatomic narrowing of the vascular lumen but to spasm. This spasm must be a sympathetic vasometer origin, as is borne out by relaxation of spasm in warm weather and in sleep and, vice versa, the increase of tension following emotional excitement. Furthermore, this lability in hypertension lessens the importance of single blood pressure determinations and leads us to doubt the apparent relief by therapeutic means, unless many estimations of pressure are made at different times of day and over a considerable period.

In examinations for life insurance the normal diurnal variation in blood pressure should be kept in mind with the knowledge that morning pressures usually represent the lower levels. Some years ago an applicant for a policy of large amount, knowing that he had a hypertension, came to the writer who was innocent of the intent of the applicant. In the course of the study of the patient the blood pressure was taken three times daily. It was observed that the morning pressure varied from 120 to 130 and in the late afternoon was 160 or thereabouts. The applicant having discovered this condition went to his insurance examiner, presumably in the morning, and secured his policy.

As long as the etiology of essential hypertension is unknown, so long will treatment be largely empirical and inefficient. Simple clinical studies, such as have been described that anyone may undertake, serve to throw more light on the subject and aid in a general understanding of the subject. A nervous element is part and parcel of essential hypertension with heightened response of the vasomotor system to emotional stimuli. Essential hypertension is not, however, incompatible with long life in its more favorable forms. Moderation in all things, with avoidance of worry and various kinds of emotional excitement, favors prolongation of life in hypertension above all else.

K. W.

THE MEMORABLE PORTLAND MEETING

When the annual meeting of any national organization has an attendance corresponding to what was anticipated, a result is attained which is worthy of record. This feature was true of the American Medical Association at Portland last month. While the registration of 3061 fell far below that which is customary in large Eastern cities among the thickly settled communities of our nation, it was a record attendance for the Pacific Northwest. A journey across three thousand miles of territory is considered a formidable undertaking on the part of eastern residents who are not accustomed to such long journeys which are undertaken with indifference by hardy westerners. Of this registration nearly half represented the profession of the Pacific Coast. These amounted to 1716 members, of whom 619 were from Oregon, 559 from Washington, 492 from California and 46 from Idaho. Nature smiled upon this occasion and provided sunshine during the eventful week, thus affording happy recollections of the attractions of Portland and its environs to these people from all parts of the country.

In some respects the greatest interest for the average visitor was centered about the technical and scientific exhibits. Probably no other occasion exists where so much information is accumulated pertaining to the mechanics of the practice of medicine as is found in these national gatherings. Here the physician and surgeon can inspect equipment, books and other features to aid in the practice of his profession. Explanations and demonstrations of their uses and provisions are presented by energetic and avid demonstrators, so that one may acquire personal knowledge of appliances that otherwise are explained only by advertisements.

The scientific exhibits were a revelation to those who had not been accustomed to attend these great annual meetings. While all were of absorbing interest, a few seemed to be outstanding in their attractions to visitors. Perhaps the exhibitions in treatment of fractures by Dr. Akin and his assiciates from Portland was the greatest practical demonstration. On living subjects methods of treatment and applications of splints were detailed numbers of times each day before large bodies of interested spectators. Dr. Menne with his assistants proved that the interest in pathologic demonstrations is universal among practitioners. An abundance of pathologic material was obtained which by daily explanations and exhibitions presented the pathology of many lesions, which probably are rarely observed by many interested spectators. It was noted that interested groups were always on hand to witness Dr. Moore's demonstrations of the vital role played by vitamins in the existence and growth of his rats. The accompanying explanations by himself and assistants always secured keen attention from many observant visitors. The moving picture has become a necessary feature for the demonstration of medical progress. These were in constant use by many exhibitors and were always surrounded by groups of interested practitioners. They proved the truth that what one can learn by the eye is more quickly absorbed than in any other method of instruction.

The report of the committee on awards of scientific exhibits was received with much interest, especially due to the fact that local exhibitors were well rewarded. Note was made by Seattle visitors that the gold medal for Class 1 was awarded to a native of their city, since Dr. Temple Fay of Philadelphia was a former Seattle boy who, with Dr. Pendergrass, were thus honored for their contribution to encephalography. Honors were received by Portland representatives through awarding of bronze medals to Drs. H. D. Haskins and E. E. Osgood for their contributions to hematogenic methods, while H. W. Jones, B. I. Philips and Olaf Larsell were likewise honored for their experimental work with nuclear extractors. Under Class 2, certificates of merit were awarded to Drs. J. Earl Else of Portland for an exhibit of the study of goiter and George W. Swift of Seattle for illustrations of choked disk.

The real substance of this great meeting was found in the scientific program of papers presented before the main medical and surgical sections and the many other sections representing leading special branches of practice. Large audiences greeted essayists in all the general medical and surgical meetings. Likewise the attendance in the specialists' sections indicated that all of these were attractive to many visitors. No attempt is here made to single out individual papers or authors for special comment, since in due time all which were read in the various sections will be subject to official publication. Suffice it to say that the high order of scientific papers which always characterizes the meetings of this great organization was maintained at this meeting.

The national game of golf, which bulks so largely among medical men, was well cared for on this occasion. The first day of the meeting, before reading of papers was begun, was a field day for the devotees of this absorbing game and commanded the exclusive attention of many enthusiasts, which was later supplemented by part-time attention as occasion would permit. The unsurpassed courses tributary to Portland fully met the expectations of the visitors. The official social function of the meeting was the President's reception and ball on Thursday evening which was largely attended and thoroughly enjoyed. Dinners representing graduates of medical schools and societies brought together many old friends. The hospitality of the Portland profession was unsurpassed and brought together on many happy occasions doctors and their wives from all parts of the country. The comment was frequently observed that this meeting was especially characterized by the attendance of family groups, since many men were accompanied by their wives and families who aimed to make the acquaintance of the natural wonders of the Northwest. Thus they took advantage of the excursions on the river, the incomparable Columbia River highway and the wonderful drive about Mt. Hood. Comments on the unmatched attractions of this section were heard on every hand, indicating that there will be permanent memories of this visit in the hearts of medical men and women from all over the country. One cannot but admire the efficiency of detail worked out by Dr. Sommer and assistants of Portland in providing for this meeting and carrying to success the innumerable technical difficulties which it entailed. They are entitled to the appreciation and thanks of the profession of the Northwest in making this great meeting such a success.

THE IDAHO LEWISTON MEETING

In spite of the fact that many members of the Idaho association found it necessary to travel hundreds of miles to reach Lewiston, the convention city, the attendance was remarkably good, being recorded as sixty-four. Headquarters were established in the Lewis-Clark hotel, which provided an exceedingly comfortable meeting place.

The first session opened with an address by the president, Dr. H. P. Ross of Nampa. He related some of the outstanding accomplishments of the organization during the past year and in particular its activities in the last session of the legislature. He was followed by Dr. Walter B. Lancaster of

Boston who described the "Opthalmoscopic Appearances in Cardiovascular-Renal Conditions." Dr. G. H. Wahle told of the treatment of varicose veins by injections. Dr. R. L. Sanders of Memphis, Tenn., in a lecture on surgical lesions of the stomach, included a description of duodenal diverticula, of which he has made a special study. Dr. Leo P. Bell of Woodland, Calif., gave a lantern slide demonstration, the "Surgical Diseases of the Spleen."

On the afternoon of the same day Dr. William F. Howard of Pocatello opened the program with a statistical report of the maternity mortality in Idaho. Dr. B. C. Balfour of the Mayo Clinic described "Benign and Malignant Lesions of the Stomach." He is of the opinon that the roentgenologist should not be called upon to determine from x-ray evidence alone whether a given gastric lesion is benign or malignant. Dr. J. N. Patten of Omaha, Neb., told of the use of foreign proteins in the treatment of ocular inflammations. The annual banquet concluded the first day of the meeting, President Ross acting as toastmaster.

The second day opened with an address by Dr. Bell on the subject of carcinoma of the large intestine. He called attention to the importance of the blood supply to the colon in all resection operations. "Tragedies of Ophthalmic Practice" were related by Dr. Lancaster. Of these he stated that glaucoma now heads the list, and is frequently overlooked in the earlier stages when treatment is most effective. Dr. Sanders analyzed his personal observation of five hundred gallbladder operations.

At the closing afternoon session, Dr. R. R. Parker of Hamilton, Mont., described clinical and laboratory findings of tularemia observed in Montana. Dr. Patten discussed "The Management of Ocular Emergencies," calling attention to the necessity of regarding and treating even the slightest abrasions as potential infected wounds.

Members of the Nez Perce County society provided delightful entertainment for the visiting physicians in the form of golf matches and motor rides to near-by points of interest. The wives were feted at luncheons and teas. A dinner dance concluded the entertainment.

THE AMERICAN UROLOGICAL MEETING

The urologists of the Northwest and their friends had the rare privilege of playing hosts to the American Urological Society from July 1 to 5, at the annual meeting held at Seattle. Only once before, twenty-four years ago, has this organization come to the Pacific Coast, and then to Portland. All sections of the United States were represented. Prof. Dr. Alexander Von Lichtenberg of Berlin, Germany, added much to the meeting by his clinic at Providence Hospital, where he demonstrated his plastic operation for hypernephrosis due to obstruction at the ureteropelvic outlet. His able discussion of the scientific papers showed his good surgical judgment and the richness of his clinical experience. Personally, he is delightful. He readily adapted himself to American customs. Not a golfer himself, he, of international renown, caddied for his new found American friends. Prof. R. Derom of Ghent, Belgium, in his quiet, modest way, also made many friends.

Dr. Joseph D. McCarthy of New York took the chair of president, relieving Dr. Homer G. Hamer of Indianapolis. Dr. Robert H. Herbst of Chicago was made president-elect. Dr. Alexander Randall of Philadelphia was reelected secretary and Dr. James B. Cross of Buffalo, treasurer.

After three days in Seattle the meeting adjourned to Vancouver, B. C., for their annual banquet and a one day session of the Western Branch of the American Urological Association. This lent to the banquet an international atmosphere with the British Union Jack and the Stars and Stripes and with toasts to His Majesty the King and to our Honorable President.

Many of our guests have expressed in flattering terms the hospitality extended to them here. President McCarthy said, "This meeting has set a new standard for the American Urological Association in its scientific program and its well organized hospitality." These national meetings are of the highest value in the exchange of experience and the methods of treatment of disease. Of even greater value are the enduring friendships made, which bind the various members of our profession closer together. It is the strength of character which we feel in these contacts and the sterling qualities of the masters are passed on in part to their pupils and disciples.

PACIFIC COAST OTO-OPHTHALMOLOGICAL SOCIETY

The seventeenth annual meeting of the Pacific Coast Oto-Ophthalmological Society was held at Salt Lake, Utah, July 1-2. Nearly one hundred physicians were present from Washington, Oregon, California, Idaho and Utah, most of them being members of the society. Interest in the meeting was augmented by the presence of forty-five members of the Triological Society, most of them coming from East of the Mississippi River. An interesting program of papers was presented, covering all phases of medical subjects in which this organization is particularly interested. A visit was made to Bingham for inspection of the largest open-pit copper mine in existence. Visitors were also given an opportunity of plunging into the waters of Great Salt Lake, which is an unique bathing experience. Victoria, B. C., was chosen for the annual meeting next year. Officers elected were: President, Arthur Jones, Boise, Idaho; vice-presidents, Chester Bowers, Los Angeles, Calif., and Frederick Hyde, Port Angeles, Wash.; secretary-treasurer, Walter F. Hoffman, Seattle.

THE WASHINGTON ANNUAL MEETING

It is expected that the annual meeting of Washington State Medical Association, to be held at Yakima August 29-31, will be a session of special interest and ought to be attractive to the profession of the whole state. Dr. H. L. Bockus, of the Postgraduate Medical School of the University of Pennsylvania, will present two papers on diseases of the upper intestinal tract. There will be other important papers on medical and surgical topics and others dealing with medical progress. A prominent member of the association, who has a large practice in industrial surgery, will present a paper that will discuss medical economics. Mr. E. J. Cannon of Spokane, who has had much to do with the medical defense fund, will read a paper concerning medical insurance and will discuss the matter of damage suits.

A golf tournament on the twenty-ninth, under the skillful management of Dr. Houston of Seattle, will be an attraction for the golf fans. About twenty trophies and forty prizes are awaiting the successful competitors. All events will have prizes for successful contestants so that, whether one plays good golf or is simply a dub, he will have a chance to obtain a prize. Requests for hotel reservations should be sent to Dr. D. F. Bice, 205 Miller Bldg., Yakima. The complete program with all information relative to the meeting will be duly mailed to all members of the association.

RADIOLOGICAL SOCIETY OF NORTH AMERICA

The next meeting of the Radiological Society of North America will be held at Toronto, December 2-6, with headquarters at the Royal York Hotel. The facilities and accommodations at this hotel are the best in the history of the society and it is expected to have a banner meeting in every way. The scientific program, clinics, scientific and commercial exhibits will be of the highest character and exceedingly interesting and instructive. The program will be interesting not only to radiologists but to physicians practising other medical specialties and general practice as well. A cordial invitation is extended to all physicians as well as radiologists to attend the Toronto meeting. Secure reservations at once through Dr. W. C. Kruger or Dr. G. R. Reid, 20 College Street, Toronto, Canada. Excellent arrangements have been made to take care of the visiting ladies.

AMERICAN COLLEGE OF PHYSICAL THERAPY

The eighth annual meeting of the American College of Physical Therapy will be held at Hotel Sherman, Chicago, November 4-7. It is believed that physical therapy has reached a sufficiently definite status in the practice of medicine so that ethical practitioners are interested in its progress and development. It is considered that Chicago, by its location and hospital opportunities, offers the most attractive opportunities for such a gathering. One-half of each day will be devoted to clinics, representing the applications of physical therapy in medicine, surgery and allied specialties. Scientific papers, addresses and demonstrations will occupy the remainder of each day's program. Information as to program and other features may be secured from the executive offices American College of Physical Therapy, 716 30 N. Michigan Avenue, Chicago, Ill.

PRIZE FOR GOITER STUDY

The American Association for the Study of Goiter will held its next annual meeting in Seattle, September, 1930. The executive council of the association has set aside the sum of three hundred dollars and a medal of honor to be awarded by the association to the author of the best essay based on original research work on any phase of goiter. It is hoped that this offer will stimulate valuable research work, especially on the basic causes of goiter. Competing manuscripts must be in the hands of the corresponding secretary, J. R. Young, M.D., Terre Haute, Indiana, by July 4. Full particulars of other regulations governing the details of the offer will be supplied by the secretary of the organization on application.

MEDICAL NOTES

Honolulu Scene of Congress. A large number of surgeons from the Pacific Northwest are in attendance at the Pan-Pacific Surgical Congress, which is scheduled to meet in Honolulu, August 14-24. Dr. George W. Swift of Seattle is general chairman for the Pacific Coast.

OREGON

Special Medical Meeting. A number of special medical societies met in Portland last month in conjunction wtih the annual convention of the American Medical Association. One of the most important of these was the meeting of the American Society of Clinical Pathologists. Dr. H. H. Foskett of Portland was elected vice-president of the society for the ensuing year.

Other associations convening with the national organization were the American Radium Society, the City and County Health Officers, American Association for the Study of Allergy, American Physiotherapy Association, American Federation of Organizations for the Hard of Hearing, American Heart Association and the Medical Veterans of the World War.

The American Board of Otolaryngology and the American Board of Ophthalmic Examiners conducted examinations for those seeking official recognition in their respective specialties.

The Medical Women's National Association held its fifteenth annual convention at the Heathman Hotel July 7-9. The organization now claims approximately five hundred members. Business meetings occupied the time of the visitors, when they were not engaged in attendance at the respective sessions of the American Medical Association.

Pediatricians Convene. The North Pacific Pediatric Society held its annual summer meeting at Thiele's restaurant in Portland July 10. On account of the coincident national convention the society held a business session in place of the usual scientific program. Officers elected were: President, Dr. W. F. Patrick; Secretary-treasurer, Dr. L. Howard Smith, both of Portland.

Professional Building Planned. A four story modern medical-dental building, to cost $410,000, is to be erected in the near future at Eugene. The site selected is at the southeast corner of Broadway and Olive streets.

Memorial Tree Planted. The medical veterans of the World War held a tree planting ceremony at the U. S. Veterans' hospital in Portland July 11, in memory of the late Dr. A. E. Rockey of Portland. Colonel John O. MacReynolds of Dallas, Texas, president of the association, turned the first spadeful of earth.

Tuberculosis Hospital Opened. Following a public reception for inspection by visitors, the new Eastern Oregon tuberculosis hospital at The Dalles was opened to patients July 9. Twenty-five persons were transferred from the Salem tuberculosis hospital. The bed capacity of the new institution is ninety.

Joins California Faculty. Dr. Clinton H. Thienes, assistant professor of pharmacology at the University of Oregon Medical School, Portland, has accepted the chair of pharmacology at the newly reorganized University of Southern California Medical School, Los Angeles.

Dr. Bernard Barkwill, formerly a member of the resident staff of the Doernbecher hospital at Portland, has located at Klamath Falls, where he will pay especial attention to pediatrics.

Dr. J. D. Plamondon, for several years assistant superintendent of the Eastern Oregon State hospital, has resigned.

Jackson County Medical Society held its annual picnic at Sultan Park, near Ashland, July 17.

Dr. J. S. Sears of Hermiston has disposed of his practice to Dr. A. W. Christopherson, formerly of Portland.

Weddings. Dr. John Griffith Marshall and Miss Harriet Dezendorf, both of Portland, were married in St. Stephen's procathedral in that city June 19. Dr. Ray W. Oldenburg of Klamath Falls and Miss Gene Banks of Halifax, Nova Scotia, were married at Reno, June 23.

WASHINGTON

Results of Basic Science Examination. At the Washington basic science examination, held last month at Seattle, sixty-three doctors of medicine were examined, of whom fifty-nine were successful and four failed. Four osteopaths were examined, all of whom passed. Seven chiropractors took the examinations, of whom two were suceessful and five failed. Four representatives of other drugless healer cults were examined but all failed. In order that these successful applicants may be licensed to practice, each must pass an examination before his respective board of examiners.

Great Northern Railway Surgeon's Association met in annual convention at Seattle July 5-6. Dr. H. J. Knott of Seattle, president of the association, was in charge of local arrangements. The attendance recorded was one hundred and fifty. Among the guests of honor was Dr. Clay Ray Murray, Professor of Surgery at Columbia University. He made an address on the subject of experimental bone production in animals.

Receives Highest Exhibit Award. The gold medal, awarded by the committee on scientific exhibits at the recent annual meeting of the American Medical Association at Portland, went to a native of the Northwest. Dr. Temple Fay, formerly of Seattle and now associate professor of neurology at the University of Pennsylvania, Philadelphia, Penn., and his coworker, Dr. E. P. Pendergrass of the same institution, were awarded the first prize for their exhibition on encephalography.

Summer Course Held. The thirteenth annual postgraduate course for physicians was held at the University of Washington July 15-19. One hundred and fifteen doctors attended. The members of the faculty included John S. Coulter, physical therapy, Northwestern University Medical School; Richard H. Jaffé, pathology, University of Chicago; Jennings C. Litzenberg, obstetrics, University of Minnesota Hospital; Victor C. Myers, biochemistry, Western Reserve University.

Orthopedist is Visitor. Dr. Walter G. Stern of Cleveland, Ohio, president of the Orthopedic Section of the American Medical Association, was a visitor in Tacoma early last month. While there he conducted an orthopedic clinic under the auspices of the Tacoma Surgical Club.

Heads Indian Hospital. Dr. John N. Alley of Lewiston, Idaho, formerly head of the United States Government Hospital for Indians at Fort Lapwai, has been appointed superintendent of the newly organized hospital for tuberculous Indians at Tacoma. The institution was formerly the Cushman hospital for United States Veterans.

Physician in Austria. Dr. J. A. Mahan, formerly of Ellensburg, who has resided in Vienna, Austria, for the past five years, has recently completed his second book on Vienna life. It is entitled "Famous Women of Vienna." The first volume written by Dr. Mahan was "Vienna, Yesterday and Today."

Hospital Addition Planned. Port Angeles Hospital and Sanitarium has announced plans to begin immediately the construction of a new ward, which will provide accommodations for fifteen additional patients.

Clallam County Medical Society held its annual election of officers at a meeting at Port Angeles Hospital and Sanitarium, June 25. William Douglas was chosen president; James McFadden, vice-president; Will H. Taylor, secretary-treasurer.

Dr. H. E. Homer, superintendent of Walla Walla Sanatorium, Walla Walla, has resigned in order to engage in private practice in California. His successor is Dr. H. G. Burdin, former superintendent of Westhaven Sanatorium at Sidney, B. C.

Veterans Elect Physician. Dr. Connor O. Reed of Bellingham has been elected president of the Washington State Association of Reserve Officers.

Appointed to Examining Board. Governor Roland Hartley recently announced the appointment of Dr. E. C. Ruge of Seattle as a member of the state medical examining board.

Dr. I. R. Watkins of Aberdeen has been elected president of the Grays Harbor Hospital Association.

Dr. Charles R. Castlen of Seattle is recovering from a back injury received when he was thrown from his mount during a polo match at Portland.

Elected Trustee. Dr. R. A. Quigley of Everett was elected a trustee of the American Hospital Association at the annual convention in New York City last June.

Dr. N. W. Wear of Bellingham has returned to his home after an absence of six months, during which he carried on postgraduate study in several European cities.

Dr. J. P. Bilodean of Bellingham has moved to Vancouver, B. C., where he will engage in practice.

Dr. J. J. Cullen of Puyallup recently disposed of his practice in that city. He is now located in Seattle.

Appointed Health Officer. Dr. John F. Christianson of Kelso has been apointed health officer of Cowlitz county to succeed Dr. L. S. Roach of Kalama.

Dr. Terence Dawson has joined his father, Dr. J. T. Dawson, in practice at Seattle.

Dr. A. C. Leslie, formerly of Monroe, has been appointed physician at the federal penitentiary at McNeil Island.

Dr. Will H. Payn of Toppenish has disposed of his practice to Dr. H. Skinner of Seattle and has moved to Yakima.

Dr. John C. Brougher, recent graduate of Oregon University Medical School, has located for practice at Vancouver in association with Dr. C. R. Zener.

IDAHO

Dr. R. J. Alcorn of Sandpoint, Idaho, has purchased the Ferry County Hospital at Republic and will place an associate physician in charge there.

Hospital Addition Started. Construction was to begin last month on a new men's ward building at the Northern State Hospital, Sedro-Woolley.

Dr. L. J. Stauffer, who has been located at Dover, has moved to Mineral, Wash. Dr. R. I. Ross of Sandpoint has taken over the contract held by Dr. Stauffer with the A. C. White Lumber Company.

Veterans' Physician Transferred. Dr. F. B. Brewer, for the past five years medical officer in charge of the United States Veterans' Hospital at Boise, was recently transferred to a similar post at Livermore, Calif.

Reelected Mayor. Dr. E. G. Braddock of Lewiston was recently reelected mayor of that city.

Dr. Ralph Alley, following the completion of a hospital interneship in California, has located for practice at Lewiston. He is to be associated with Drs. Braddock and Scott.

Dr. K. K. Sherwood, formerly of Stillwater, Minn., has opened an office at Redmond.

Dr. E. H. Field, who practiced for a number of years at Rose Lake, has moved to Kendrick.

OBITUARIES

Dr. Hugh S. Mount, Oregon City, Ore., one of the most prominent physicians of his native state, died at the Oregon City hospital July 9, following a protracted illness, aged 54 years. He was born at Silverton, Ore., in 1875, and graduated from the University of Oregon Medical School, Portland, in 1903. He entered practice at Oregon City soon afterward as the partner of Dr. E. A. Sommer, now of Portland. Later he became associated with his brothers, Drs. Guy and Albert Mount, and his nephew, Dr. Frank Mount, all of whom survive him. He was active in medical affairs in the state and last year occupied the office of president of the Oregon State Medical Society, also having been president of the Portland Academy of Medicine.

Dr. Roland R. Leep, Bandon, Ore., was killed June 29, when his own shotgun was accidentally discharged while he was hunting for sea lions on a rocky reef off the Oregon coast near Bandon. He was 41 years old. He was born in 1887 at Halfway, Ore., the son of Dr. K. A. Leep. In 1911 he was graduated from the University of Oregon Medical School, Portland, since which time he had been engaged in practice at Bandon.

Dr. H. Frye, Omak, Wash., a pioneer physician of the Okanogan valley, died at his home on or about June 30, aged 63 years. He was born in 1866, and graduated from the Kansas City Homeopathic Medical College, Kansas City, Mo., in 1896.

Dr. May H. Cardwell, a retired member of the Oregon State Medical Society, died at her home in East Springfield, Penn., July 14, aged 65 years. She was born in 1864, and graduated from Willamette University Medical Department, Salem, Ore., in 1885. Previous to her retirement in 1927 she had practiced for forty years in Portland.

REPORTS OF SOCIETY MEETINGS

OREGON STATE MEDICAL SOCIETY

MINUTES OF THE FIFTY-FIFTH ANNUAL MEETING OF OREGON STATE MEDICAL SOCIETY, HELD AT SACAJAWEA INN, LA GRANDE, ORE., MAY 16-18, 1929.

HOUSE OF DELEGATES

First Session

Thursday, May 16

The opening session of the House of Delegates was called to order by President Lee B. Bouvy, at 9:00 a.m., in the Banquet Room at Sacajawea Inn.

On roll call the following officers and councilors were present: L. B. Bouvy, Wilson Johnston, J. W. Sifton, F. D. Stricker, J. E. Else, William Kuykendall, C. E. Sears, C. L. Booth, G. E. Houck, H. S. Mount, E. A. Sommer, E. B. McDaniel, W. P. McAdory and the executive secretary.

The following delegates were present: E. L. Zimmerman of Eugene, Central Willamette District Medical Society; W. C. Hunt of Klamath Falls, Klamath and Lake Medical Society; T. E. Griffith of The Dalles, Mid-Columbia Medical Society; T. H. Coffen, F. H. Dammasch, and R. E. Watkins of Portland, Portland City and County Medical Society.

In the absence of the regular delegates, the following delegates were seated by vote of the House: R. J. Pilkington, Astoria; Clatsop County Medical Society; J. B. Gregory, Wallowa, and Lewa Wilkes, La Grande, Eastern Oregon District Medical Society; E. B. Pickel, Medford, Jackson County Medical Society; L. S. Kent, Eugene, Lane County Medical Society; W. B. Morse, Salem, Polk-Yamhill-Marion Medical Society; A. G. Bettman, J. R. Coffey, I. E. Gaston, J. C. Ghormley, Kittie P. Gray, C. U. Moore, L. T. Nelson, D. L. Palmer and S. E. Reese, of Portland, Portland City and County Medical Society; G. E. Houck, Roseburg, Southern Oregon District Medical Society.

Upon motion duly made and seconded, it was voted to dispense with the reading of the minutes of the last meeting, they having been printed in the November, 1928, number of Northwest Medicine.

President Bouvy announced the appointment of the following committees: *New Business,* J. E. Else, Chairman, T. E. Higgins, H. J. Clements; *Unfinished Business,* C. J. McCusker, Chairman, H. C. Bean, W. B. Morse; *Resolutions,* J. A. Pettit, Chairman, C. E. Sears, A. G. Bettman; *Nominations,* E. B. McDaniel, Chairman, Wilson Johnston, William Kuykendall, H. S. Mount, J. B. Gregory, E. A. Sommer.

Report of the Secretary

Dr. Frederick D. Stricker, Secretary, made the following report:

The Society has enjoyed a healthy growth during the short period since our last meeting in September, 1928. The membership roll for the first time in our history has passed the six hundred mark with a total of 612 members. The distribution of the membership among the various component societies is as follows:

In spite of the healthy growth in our membership, however, there is still a large field to cultivate. This is indicated by the fact that the percentage of physicians who belong to their local medical societies varies greatly in different parts of the state. Generally speaking, of course, local medical societies are strongest in numbers in the larger towns of the state, but there are several of the less densely populated districts, where a live medical society has been maintained for many years.

In order to get a more exact picture of this situation, I have had two charts prepared. (Dr. Stricker here presented the charts referred to.) One of these shows the percentage of practicing physicians who are affiliated with each of our component societies. The other shows the percentage of practicing physicians in each county who are affiliated with some one of our component societies.

I hope that every officer and delegate present will note the standing of his component society on these two charts, and will strive to see that his locality soon passes the 50 per cent mark which represents the minimum percentage of membership with which we should be satisfied.

Upon motion duly made and seconded, it was voted that the report of the Secretary be accepted and placed on file.

Report of the Executive Secretary

Clyde C. Foley, Executive Secretary, presented his annual report as follows:

Notwithstanding the short interval which has elapsed since our last annual meeting, the report of progress which I have to make is the most substantial since our full time program has been put into effect.

Through the cooperation of the Portland City and County Medical Society, the Oregon Public Health League, and the Medical Society Telephone Service, we have been

Members

Component Society	*Active*	*Junior*	*Associate*	*Non-Resident*	*Honorary*	*Life*	*Total*
Central Oregon	8	....	....	....	....	....	8
Central Willamette	8	....	....	....	....	....	8
Clatsop	10	....	....	....	2	....	12
Coos and Curry	14	....	....	....	....	....	14
Eastern Oregon	35	....	....	....	....	....	35
Jackson	7	1	....	....	1	....	9
Klamath and Lake	9	....	....	....	....	....	9
Lane	32	....	....	....	....	....	32
Mid-Columbia	13	....	....	....	....	....	13
Portland City and County	368	22	12	4	7	1	414
Polk-Yamhill-Marion	41	....	2	....	....	....	43
Southern Oregon	8	....	....	....	1	....	9
Tillamook	6	....	....	....	....	....	6
Total	559	23	14	4	11	1	612

able to secure more ample quarters on the ground floor of the Medical Dental Building, with entrances from the street and the lobby of the building. There is also a meeting hall with a seating capacity of three hundred people adjacent to our office space, so that our scientific meetings can be held at our own headquarters whenever our annual sessions are held in Portland.

The taking of these new offices has enabled us to greatly expand our public educational work. A Public Health Information Bureau and Reading Room has been established in the front section of our new headquarters. Here we have on display both in our store windows and the interior a complete stock of pamphlets, posters and other materials, dealing with all phases of health education. Materials are also available which warn the people against nostrums and quackery. A stock of *"Hygeia"* and other high grade health magazines is also carried. This bureau has attracted widespread interest among physicians, teachers, ministers, club secretaries and lay people generally, and several thousand pieces of literature have been distributed during the past few months. In connection with this educational work, the society office is also now acting as a sales agency for the books and journals published by the American Medical Association.

During the past few months, also, the Portland City and County Medical Society has established The Doctor's Official Credit Bureau for the purpose of compiling records as to how patients pay their doctors, and to collect delinquent accounts for its members. This service will soon be placed upon a state-wide basis and monthly reports of delinquent debtors will be furnished for each county in the state. This bureau should be of great benefit in reducing the large losses caused by rendering service to chronic debt-dodgers.

Another cooperative plan which has been given a good deal of consideration is that of group purchasing of printing for our members. It is likely that a definite plan will be worked out within the next few months which will result in saving our members substantial sums on the printing of their office forms and stationery.

Our office equipment has been considerably augmented since our last meeting, in part through the cooperation of The Oregon State Board of Dental Examiners. Additional equipment which has been made available includes an addressograph machine, a mimeographing machine and an adding machine. Besides increasing the efficiency of our own office, this equipment will make more feasible the carrying out of a centralized system of billing and accounting for our members which is another type of service which we have in contemplation.

Our society is making steady progress in the two fields of endeavor in which a progressive medical society should be active, the business side of the physician's practice and the education of the public. The continued whole-hearted support of the membership is all that is necessary to keep the Oregon State Medical Society in the front rank of professional societies of the country.

Upon motion duly made and seconded it was voted that the report of the Executive Secretary be accepted and placed on file.

Report of the Treasurer

Dr. J. Earl Else, treasurer, made the following report of the finances of the Society as prepared by P. W. Janney, certified public accountant:

May 11, 1929.

To Oregon State Medical Society,
Portland, Oregon.
Gentlemen:

Acting upon your instructions, I have prepared and submit herewith an interim report of the finances of the Oregon State Medical Society as at April 30, 1929, together with a statement of the income and expense of the Society for the eight months ended April 30, 1929. A complete report will be submitted at the close of the Society's fiscal year, August 31, 1929.

The Investment item in the Balance Sheet is made up of the following securities (page 371):

The Republic of Panama and United States Third Liberty Loan Bonds owned by the Society at the date of the last report were called for redemption.

Your auditor called upon the receiver of the Ralph Schnelock Company, who stated there had been no change in the status of the balance due the society. It is hoped that some definite information may be given in the annual report.

In connection with the disbursements of the society your Executive Secretary and Auditor have prepared and will shortly put into operation a system of voucher checks, which, it is believed, will obviate the necessity of issuing warrants.

Very truly yours,
P. W. Janney,
Certified Public Accountant.

Drs. E. B. McDaniel and E. A. Sommer expressed pleasure at the fine condition of the society's finances as revealed by the Treasurer's report.

Upon motion duly made and seconded, it was voted that the Treasurer's report be accepted and placed on file. Dr. Else was instructed to secure the services of Judge Charles H. Carey to assist in ascertaining the status of the interim certificates issued by the Ralph Schnelock Company, for which the society has not yet received the securities purchased sometime ago.

Report of Committee on Scientific Work

Dr. Frederick D. Stricker, Chairman, moved that the printed program be made the report of this committee. The motion was seconded, and it was voted that the program be accepted as the report of the committee and filed.

Dr. Stricker called attention to the abundance of papers on the program and expressed the opinion that the number at each morning and afternoon session should hereafter be limited to four. He also indicated that the committee would likely adopt definite rules for the presentation of essays, one of which would be the requirement that all papers be submitted in completed form in advance, so that the committee might examine them.

Report of Committee on Public Policy

At the request of Dr. E. B. McDaniel, Chairman, the executive secretary read the following report:

Since the last annual session rapid progress has been made in improving the public educational facilities of the society. Space has been secured on the ground floor of the new Medical-Dental Building in Portland and a very

General Fund		
City of Copenhagen 5's	$1,945.00	
Interstate Public Service Company 5's	480.00	$ 2,425.00
Medical Defense Fund		
City of Copenhagen 5's	972.00	
Interstate Public Service Company 5's	480.00	
Canadian National Railway Company 4½'s	2,880.00	
Government of the Argentine Nation External 6's	3,018.75	
Republic of Chile External 6's	1,876.50	9,227.75
Total		$11,652.75

Balance Sheet as at April 30, 1929

ASSETS			
Current			
Cash on Hand and in Bank—General Fund		$ 3,399.65	
—Medical Defense Fund		2,435.70	$ 5,835.35
Members Dues Receivable		6,810.00	
Less Portion allocable to Oregon Public Health League	$2,813.50		
Reserve for Uncollectible Dues	99.50	2,913.00	3,897.00
Accrued Interest Receivable			429.59
Total Current Assets			10,161.94
Investments			11,652.75
Due from Receiver Ralph Schnelock Company			5,945.00
Fixed—Office Furniture and Fixtures			273.20
			$28,032.89
LIABILITIES			
Current			
Warrants Payable			1,125.49
Unearned Dues—General Fund		2,877.33	
—Medical Defense Fund		1,276.00	4,153.33
Total Liabilities			5,278.82
NET WORTH			
Surplus—Balance August 31, 1928		21,585.03	
Net Income for eight months ended April 30, 1929		1,169.04	22,754.07
			$28,032.89

Statement of Income and Expense for the Eight Months Ended April 30, 1929

Income		
Members Dues	$4,752.84	
Interest Income	319.26	$5,072.10
Expenses		
Annual Meeting	534.97	
Expense of Executive Secretary	24.30	
Miscellaneous	123.06	
NORTHWEST MEDICINE	1,071.00	
Office Expense	116.54	
Postage	199.20	
Printing and Multigraphing	198.58	
Rent	285.00	
Salaries	250.00	
Telephone and Telegraph	37.91	
Auditing	62.50	
Campaign for A. M. A. Convention	1,000.00	3,903.06
Net Income		$1,169.04

complete supply of health pamphlets, posters and other material has been provided. A subscription agency for "*Hygeia*" has been installed and a considerable number of subscriptions are being taken. All of the American Medical Association's material on nostrums and quackery has also been made available.

This activity has been carried on under the name of the Public Health Information Bureau of the Oregon State Medical Society and for the first time in its history the official state organization of physicians is in a position to play the important part in the leadership of the public health educational movement which it should properly play. The establishment of the Bureau has also called the attention of physicians to the importance of their function as teachers of the public. This is demonstrated by the fact that numerous physicians in various parts of the state have responded to inquiries from their patients and friends by writing the Bureau, following which a piece of literature regarding the subject of inquiry has been sent to the interested persons with the statement that this was done at the request of Dr. Blank, one of our members.

The cumulative effect of this sort of activity over a long period of years will definitely place the physician in the position of leadership in health matters which he should rightfully command. In attending to these individual examples of health education the society, through this Bureau, has made, and will continue to make, numerous valuable contacts with teachers, ministers and other persons who are in a position to exert a vital influence in spreading the doctrine of sound education in health matters.

We were unfortunate during the recent session of the state legislature in that the piece of legislation in which we were most interested, the basic science act, failed to receive favorable consideration, in spite of the fact that a great deal of time and effort were spent to inform the members regarding the need for such a law to protect the public health. There was much opposition to the proposed law on the ground that it required a new board and, therefore, additional state administrative machinery. It was unfortunate, too, that there were numerous other professional regulatory measures up for the consideration of the legislature, so that the attitude of the members was not receptive to the passage of legislation of this type.

Notwithstanding the failure of our constructive program, we were successful in preventing the pasasge of any unfavorable legislation. Some of the naturopaths, who had been denied licenses under the law passed by the 1927 legislature, had a bill introduced which would have made it possible for them to secure licenses without examination, provided they could show that they had practiced naturopathy anywhere in the United States for a period of two years. This bill was killed in committee as it was shown that the passage of such a law would mean the licensing of a considerable number of wholly incompetent persons parading under the title of "doctor." Another piece of obnoxious legislation which was killed was a bill which would have denied hospitals the right to refuse admission to physicians whom they regard as incompetent or unworthy to treat the sick.

It is our opinion that we will not be successful in passing the basic science law until the issue is presented directly to the people. For this reason we believe that initiative petitions should be prepared and circulated by physicians, dentists, and health organizations, with a view to placing the basic science act on the ballot in the general election in November, 1931. The signatures of some 15,000 legal voters must be secured in order to accomplish this, but we believe with the wholehearted support of the medical profession and the intelligent laity the effort will be successful.

Respectfully submitted:
E. B. McDaniel, Chairman
Ralph A. Fenton
Wilson Johnston
Joseph A. Pettit
Roy S. Stearns
Lee B. Bouvy

Report of Committee on Publications

In the absence of Dr. C. J. Smith, Chairman, Dr. A. G. Bettman presented the following report:

Your attention is again called to the excellence of our official publication, Northwest Medicine, and to the high type of original articles and editorials which it contains. This excellence is attested by the fact that the 1928 Year Book on General Surgery of the Practical Medicine Series contains so frequent abstracts from it.

Of the 843 references in this volume, from journals published all over the world, fourteen are from eight numbers of Northwest Medicine, or one in sixty. Ninety-six journals are quoted and from only fourteen are more quotations made than from Northwest Medicine and from only eight American journals were more quotations made. Of the twenty-four state journals quoted from, only one is named more often than is our own. Here is indeed a worthy recognition of Northwest Medicine and a high tribute to its editor, Dr. Clarence A. Smith.

It might be of interest to you to know that of the 843 references in this volume eighteen or one in forty-seven are from papers written by physicians in the Pacific Northwest, eleven written in Oregon, six in Washington and one in British Columbia. These contributions were to eighteen numbers of six different journals, eleven being from Northwest Medicine, and the remaining seven being from five other journals.

Upon motion duly made and seconded, it was voted that the foregoing report be accepted and placed on file.

Dr. Bettman called attention to the amendments to Chapter 8 of the By-Laws, relating to the scope of the activity of the committees on Public Policy and Publications which awaited the action of the House. He proposed the amendment of Section 3 of Chapter 8, by the substitution of a new provision creating a Committee on Public Education for that part of the proposal of last year which would make public education a function of the Committee on Public Policy. Upon motion duly made and seconded it was voted that Dr. Bettman's proposal be referred to the Committee on New Business, and that the substitute amendment be drafted and acted upon by the House with the balance of the amendments to Chapter 8, held over for action from the last meeting.

Report of Committee on Public Defense

In the absence of Dr. Roy C. McDaniel, Chairman, the executive secretary read the following report:

This report is for the period from September 20, 1928, to May 16, 1929. At the time of our last annual session there were eleven suits pending against members. Five new actions have been instituted, making a total of sixteen cases to be reported at this time.

In the sixteen cases under consideration, two have been nonsuited in favor of the physicians, two have resulted in jury verdicts for the physicians, and two verdicts have been rendered in favor of the plaintiffs, one for $7500.00 and one for $1000.00. Both of the latter cases will be appealed, and it is possible that they may be ultimately decided in favor of the physicians. Ten suits are still pending, but many of these are very old cases, and it is unlikely that over half of them will ever come to trial.

The committee again urges every member to provide himself with a liability policy at the low rate available through special arrangement with the large insurance companies. The cost of protection is very low compared to that paid in other states, and no physician should be without it. The committee recommends that every member have a policy, even though he may be employed by another physician or group, because the fact that he may be acting as agent of another physician in administering treatment does not remove his liability in the event of a suit for alleged malpractice. When a suit is instituted under such circumstances, the insurance companies are likely to be chary of defending it, if the physician assistant is sued, unless he, as well as his employer, carries a policy.

In conclusion, the committee solicits the cooperation of every member to the end that the malpractice suit evil may be held down to the absolute minimum.

Respectfully submitted:
Roy C. McDaniel, Chairman
Frank E. Butler
Wilson Johnston

Upon motion duly made and seconded it was voted that the report of the committee be accepted and placed on file.

At the request of President Bouvy, the executive secretary read a letter from the W. R. McDonald Company concerning their experience in writing physician's liability and defense insurance for members of the society, and setting forth the terms upon which this insurance can be secured by members at the present time.

Dr. Hugh S. Mount called attention to the fact that a suit had been brought against himself and his associates and that the insurance company wished him to pay one-fourth of the expense because one of his assistants had no liability policy.

Report of Committee on Auditing and Appropriations

In the absence of John H. Fitzgibbon, Chairman, the executive secretary reported that the committee had no special report to make other than that the interim report prepared by P. W. Janney, certificed public accountant, had been examined and appeared to be correct.

Committe on Cancer Control

In the absence of Dr. Robert C. Coffey, Chairman, Dr. J. Earl Else reported that the committee had held no meetings during the year, and that there was therefore no report to be made. Dr. Else said that there were in contemplation certain plans for securing lay funds for educational purposes and cooperating with interested groups among the laity.

Report of Committee on Public Health and Disease Prevention

In the absence of John H. Fitzgibbon, Chairman, the executive secretary read the following report:

It is pleasing to note that the general condition of life and health in the State of Oregon is improving. Tuberculosis which was formerly one of the leading causes of death has been cut in half since 1900. The mortality from diphtheria has been reduced to a very small amount, due to the development of antitoxin. Typhoid fever is on the wane and so with many others of these communicable diseases. Not so much progress has been made against some of the respiratory infections, as pneumonia and influenza.

The recent influenza outbreak which occurred during the closing months of 1928 and the first quarter of 1929 was both severe and widespread. The deaths were due directly from influenza and influenzal pneumonia, and from the chronic diseases among older persons who were unable to withstand an attack of this acute condition together with this chronic disease. It has been estimated that the mortality of this epidemic was only one-fifth as high as the great epidemic of 1918-1919.

While the communicable diseases are being reduced and the chance of life increased thereby, the degenerative and organic diseases do not show a similar decrease. Heart disease is one of the leading causes of death in Oregon as well as in the United States. Cancer, apoplexy and kidney affections are increasing. Diabetes also seems to be on the increase.

It is important that the medical profession take steps to check these organic affections. The regular examinations of apparently well persons will do much to detect these afflictions early, when curative measures can be applied effectively.

There can be no effective disease eradication without the cooperation of the physicians of the state. Disease prevention will never be a reality until we have the combined actions of the health officials and the private physicians. The retarded action of physicians is due to the fact that they have refused to consider the regulations of the health department of sufficient importance. Some physicians have opposed the measures to prevent disease which they allege have damaged the income of the profession.

The health department advises the public to go to the family physician for treatment. Health work when properly conducted will do much to increase the work of the physicians who are in step with the modern methods of disease prevention and cure. The public can best be served and the health of the people conserved when the health department is supplemented by the whole hearted cooperation of the private physician. Just as the medical profession has been too prone to criticize health work, so perhaps health workers have been too prone to criticize the private physician.

Physicians can no longer confine their practice to curative medicine. They must recognize that they have a duty to perform as deputy health officers. Preventive medicine is an established fact and the private physician who will not enter actively into the practice of preventive medicine has only himself to blame.

A community in which the health officials and the private physicians join hands will accomplish much not only in preventing disease but will make possible the treatment of disease while it is still curable.

Respectfully submitted:
Harold C. Bean, Chairman
W. B. Morse
William T. Phy
J. H. Rosenberg
E. B. Pickel
C. J. Smith
Frederick D. Stricker

Upon motion duly made and seconded, it was voted that the foregoing report be accepted and placed on file.

President Bouvy stated that he had examined the statistics on the prevalence of diphtheria and that in his opinion the morbidity and death rates are unnecessarily high. He urged a campaign to extend the use of toxin-antitoxin. Dr. Houck expressed the opinion that the incidence in the state of all the communicable diseases was much too great and urged a campaign against these diseases. After considerable discussion, upon motion duly made and seconded, it was voted to go on record as favoring a state-wide campaign of immunization against scarlet fever, diphtheria and smallpox among children under ten years of age.

Dr. E. B. McDaniel called attention to the disaster of the clinic of Dr. George W. Crile of Cleveland and urged the sending of a message of sympathy to Dr. Crile. Upon motion duly made and seconded, it was voted that the Committee on Resolutions should draft an appropriate message and wire it to Dr. Crile.

At 11:00 a.m. the House adjourned until Friday at 7:30 a.m.

SECOND SESSION

Friday, May 17

The second session of the House of Delegates was called to order by President Lee B. Bouvy at 7:30 a.m., in the Banquet Room at Sacajawea Inn.

On roll call the following officers and councilors were present: Lee B. Bouvy, Wilson Johnston, John W. Sifton, Frederick D. Stricker, Joseph A. Pettit, William Kuykendall, Charles E. Sears, C. L. Booth, George E. Houck, Hugh S. Mount, E. A. Sommer, E. B. McDaniel, W. P. McAdory, and the executive secretary.

The following delegates were present: E. L. Zimmerman of Eugene, Central Willamette Medical Society; R. J. Pilkington of Astoria, Clatsop County Medical Society; Thomas E. Higgins, Baker, Eastern Oregon District Medical Society; E. B. Pickel of Medford, Southern Oregon District Medical Society; Warren C. Hunt of Klamath Falls, Klamath and Lake Medical Society; George I. Hurley and Leslie S. Kent of Eugene, Lane County Medical Society; Thomas E. Griffith of The Dalles, Mid-Columbia Medical Society; D. R. Ross and W. W. Baum of Salem, Polk-Yamhill-Marion Medical Society; A. G. Bettman, Ralph A. Fenton, Ira E. Gaston, J. C. Ghormley, Kittie Plummer Gray, Franklin P. Johnson, Frederick A. Kiehle, C. Ulysses Moore, Luther T. Nelson, Sherman E. Rees, and R. H. Wellington of Portland, Portland City and County Medical Society; George E. Houck of Roseburg, Southern Oregon District Medical Society.

The following members were also present: W. B. Neal of Eugene, Charles E. Palmer of Ontario, and David H. Rand of Portland.

The following visitors were present: Paul Davis of Boise, and Clarence A. Smith and George W. Swift of Seattle.

Report of Committee on State Industrial Affairs

Dr. Hugh S. Mount, Chairman, made a verbal report of progress concerning the drafting of a new fee schedule and a plan for closer working relations with the State Industrial Accident Commission.

Report of Committee on Medical Education and Hospitals

In the absence of Dr. Karl H. Martzloff, Chairman, Dr. Franklin P. Johnson presented the following report:

Gentlemen, your committee desires to bring to your attention in this annual report just one phase of medical education, namely, that of hospital interneships in the State of Oregon. We are cognizant at once that this problem is one that exists in only one of our communities, the city of Portland, but we are also sensitive to the possibility that within the near future other hospitals in the state may desire to develop interneships for recent medical school graduates.

The matter of hospital interneships partakes of both the matter of hospital administration as well as medical education, for it is required in some states that candidates for the medical degree shall serve not only four years in formal medical school instruction, but in addition shall spend a fifth year in an accredited hospital. While this is not a requirement in our state, it is highly recommended to our diplomates. Such an arrangement, in its basic conception at least, is admirably suited to meet the needs of our hospitals and our newly licensed physicians, as well as the public at large. However, your committee, as well as other members of our Society who have seen the method of interne training in actual practice, have felt the need for an analysis of the hospital interneship problem, and herewith offer several suggestions for its improvement.

In the city of Portland, there are five hospitals that provide interneships for graduates from accredited medical schools. Their names, bed capacity, number of internes and the ratio of internes to patients is as follows:

Name	No. of Beds	No. of Internes	Ratio of Internes to Patients
St. Vincent's Hospital	400	5	1-80
Good Samaritan Hospital	325	7	1-46.5
Emanuel Hospital	200	5	1-40
Multnomah Co. Hospital	275	13 incl. 3 residents	1-21
Shriners' Hospital	60		1-30

In our discussion we shall exclude the Multnomah County Hospital and the Shriners' Hospital. The situation in the former is undergoing rapid changes of a most desirable character, due to the splendid cooperation of Dr. Harry Cliff with the Medical School. It is also a closed staff hospital and not subject to the problems of an open staff institution. In the case of the Shriners' Hospital, we are dealing with an institution possessing a highly competent closed staff, who confine their work to a limited surgical specialty.

Our analysis comprises the following considerations: (1) The character of interne staff organization. (2) The relation of the hospital staff to the interne. (3) the systematic training of internes by (a) periodic ward rounds on free patients. (b) Individual training in the surgical dressings, various types of diagnostic procedure, various forms of therapy, particularly intravenous medication, etc. (4) The hospital organization in relation to the interne problem.

Our remarks are obviously not aimed at any one institution, and they are more or less general to all the hospitals, in some instances being more specific for one than for the other. It is also manifest that no element of personal ill will should be read into this report which is impartial and designed solely for purpose of constructive criticism.

1. *The character of interne staff organization.* As far as we have been able to determine, the interne staff organizations consist merely of a group of recent medical school graduates. The men (or women) enter the hospital at practically the same time, without previous training, and without the supervision or tutelage of some experienced interne who is familiar with the customs or routine of the hospital in question.

The interne group in these hospitals is under the nominal supervision of an interne committee, which as far as we can ascertain functions in name only. This is offered not as a criticism of the interne committees, but to call attention to a more fundamental cause which we shall mention later.

In addition, in some hospitals, some one interne is assigned to an administration role for a limited period of time, when he assigns his fellow internes to their various hospital tasks whatever they may be. The above function is assumed by each interne during some period of his interneship.

Our criticism of the above is, first, that there is no provision for some form of continuity in the interneships. The internes arrive in a group and at the end of their year's work, they leave in a group. This allows for a pronounced hiatus in the continuity of the hospital work where the interne is concerned, with consequent disturbance to the entire hospital regime.

To remedy this we would suggest a policy similar to that used in some of the middle-west and eastern hospitals. This provides that, instead of having all interneships begin and cease during a single day, week or month, such changes be staggered. By this we mean that only a portion of the interne staff, let us say one-third, be replaced by new internes on a given date. On another date, say one month later, let there be a similar change, and again at the end of the second month when the transition becomes completed. In this way the first two groups of oncoming internes are under the guidance of internes who have had practically a year's hospital experience. By the time the last group arrives there will be two earlier groups of two and one months experience who again can act as guides for the most recent and inexperienced arrivals.

Another suggestion we would offer is the provision for some form of advanced interneship usually spoken of as "residency," whereby one or two internes from the previous year are held on for an additional year. It would become the duty of such "residents" to supervise the first year internes, and also to have charge, with proper supervision, of free hospital cases.

2. *The relation of the hospital staff to the interne.* By the term "hospital staff" we mean that small group of outstanding physicians who have been selected by the governing body of the hospital to act as its professional advisors, and to act as the hospital's professional medical representatives. The function of a hospital staff is, therefore, a responsible one and generally fraught with many duties.

One of these duties concerns the interne problem. Your committee has been able to ascertain little evidence of any organized systematic staff interest in the interne problem. We say this despite the fact that in some instances hospitals have divided their work into "services," such as surgical, obstetric, medical, etc., and in some instances assign an interne to one particular well qualified physician for a stated period of time, a most desirable practice. But with this everything in the nature of organized staff interest appears to perish and our neophyte is left to flounder as best he may.

The difficulties presented by this problem are many. One of the important stumbling blocks is the fact that our hospitals, in addition to their staffs, have a tremendous number of visiting physicians who have no status other than permission to utilize the hospitals' facilities for the care of their patients. The latters' patients often outnumber the patients of the staff members.

This comment, we believe, is pertinent because we feel that, in spite of this fact, it should be the function of the staff to provide some form of systematic training for the interne. We can also see how their training can in large measure be nullified by contact with so many physicians, each carrying out a different procedure on their patients for similar conditions. This must result in an inevitable jumble of perception for the interne who is in a decidedly formative and receptive period. He, furthermore, has had insufficient experience to enable him to properly evaluate various procedures and know where to place them on his too slender scaffold of professional training. We, therefore, feel it most essential that the interne receive from the hospital staff an adequate introduction into the care of hospitalized patients so that he may apply his knowledge intelligently and without jeopardizing the patients assigned to his care.

This we shall now briefly bring to your attention in the following subtopic:

3. *Systematic training of internes.* Since our general hospitals are not university hospitals and graduates from many schools are required to spend at least one year in an accredited hospital before fulfilling the requirements of such schools, we feel that an interne year should be one of well organized and practical instruction. In the furtherance of this idea we offer a few specific suggestions.

It is taken for granted that each interne should perform his share of complete history taking and physical examination. By this we mean that his findings should be recorded so that negative as well as positive phases of a patient's history are developed. Also in his physical examination, his findings should be described and not epitomized by designating an anatomic entity as "normal."

In the case of private patients who belong to visiting physicians (not staff men), there probably will be little interne supervision or instruction. This is almost inevitable because of our hospital organizations. We suggest, however, that the hospital make every effort to induce such physicians to give the interne a chance to learn, to share the responsibility of the case, and to permit him to take an active part in every operation, important dressing, etc. When the interne is working under the supervision of one of the members of the staff, he should be given greater responsibility and a close check made upon his work. His histories should be carefully read and constructive criticisms made. He should either be permitted to make an initial examination or be present when the staff man makes his examination and he should then be given an opportunity to arrive at a diagnosis unassisted. Finally, it should be the duty of the staff man to make sure that the interne has a clear understanding of the whole problem presented by the patient.

The interne should be allowed to follow the entire course of each of the patients he has under his supervision. In the case of a surgical patient, he should be a member of the operating team whenever his patient is operated upon. This immediately brings up the question of assigning patients to internes, the matter of segregating certain types of patients, etc., a matter which is discussed further on.

We feel it would be most instructive to have some member of the staff make weekly hospital rounds on free patients with all the internes from a given service (medical or surgical) in attendance. This would put each interne on his mettle to have his patient's record complete before being presented to his confreres. I would also give the interne an opportunity to see the more interesting patients with whom, in the ordinary course of events, he would not come in contact. The result would be, we believe, a creation of deeper interest on the part of the interne (which is indispensable) and a feeling that he is an integral part of a closely knit organization which overlooks no avoidable errors in either the study or the treatment of its patients.

There should also be given attention to such details as the technic of dressing operative wounds, the application of special diagnostic and postoperative procedures, and the application of various forms of intravenous therapy.

We would also suggest that each hospital have some practical outline of certain methods or procedures which are considered safe and desirable by the staff. With them as a guide, an interne can govern himself so that in an emergency the procedure he may employ will be one considered by any competent physician as within the realm of a sound practice, thereby protecting his as well as the institution's reputation and at the same time safeguarding human life.

We have also been impressed by the comparative lack of individual responsibility exhibited by internes for the patients under their supervision. The custom appears prevalent to permit nothing to interfere with an interne's social engagements or contemplated night off. This spirit prevails, even though much of his routine work is incomplete or some seriously ill patient with whose condition he is familiar requires his observation rather than that of a fellow interne who is totally unfamiliar with the serious problem involved. It is here as well as in other matters of esprit de corps, where proper organization would solve many trying problems.

4. *The relation of the hospital administration* (aside from the staff) is also important, for on it depends the ability of the staff to carry out a satisfactory program for the interne.

First of all we would suggest reducing the arithmetical ratio between patients and internes. It is difficult to see how one interne can be responsible for more than twenty-five surgical or thirty medical patients, even where the routine laboratory work is performed in a central laboratory with technicians.

We would also suggest that one of two methods be used to assign internes to patients. In hospitals where no definite services are developed it is probably most satisfactory to make an interne responsible for his specified number of patients on a certain ward or a specified wing of the hospital. This concentrates his field of activity and makes him alone responsible for his particular domain.

In hospitals where so-called services are recognized, we believe that the best results can be obtained, where certain wards are set aside for specific purposes, viz., medical wards, surgical wards, fracture wards, etc. Here, again, each interne should have assigned him his particular group of beds for whose inmates he is entirely responsible. In hospitals where services are recognized, but no segregation of surgical and medical patients is carried out, we believe again that assigning internes to a particular ward or group of rooms is more desirable than to have them free lance the whole institution for patients in their respective service. The practice which obtains in some hospitals of assigning to internes patients for history and physical examination without regard to the patient's malady or the service to which the interne theoretically belong appears to your committee as quite demoralizing. It reduces the interne's status to that of a clerk for obtaining histories and doing routine physical examinations on patients, with whom he probably will never again come in contact. After all it is more important for the interne to observe the entire course of a malady than it is to obtain a glimpse of it in one of its transitory phases.

Your committee is fully appreciative of the sketchiness of this report and its manifest shortcomings. We feel, however, that the subject is important and worthy of your recognition and support. A properly organized interne service, we believe, can have only one result and that is one of benefit to interne, hospital, staff and finally to the one for whom all this is created, the patient.

It is also hoped that some of our hospitals in other parts of the state will develop interne services which they are well qualified to support.

Respectfully submitted:
Karl H. Martzloff, Chairman
Franklin P. Johnson
Homer P. Rush

Dr. E. A. Sommer expressed pleasure at the excellence of the foregoing report. He pointed out the difficulties of the hospitals in securing internes and suggested that the same committee study the interne problem from the standpoint of the hospital.

Upon motion duly made and seconded, it was voted that the report be accepted and placed on file, that a copy be sent to all the standardized hospitals in the state, and that the same committee be reappointed to give further study to the interne problem.

Report of Committee on Military Affairs

In the absence of Dr. H. M. Greene, chairman, the executive secretary read the following report:

During the past year the Committee on Military Affairs has been chiefly concerned in securing attendance at the troop school conducted at Portland by Major Herbert C. Mallory of the Medical Corps of the Regular Army.

This school has been a great success and has had a regular attendance of from sixty to eighty medical reserve officers and medical administrative reserve officers residing in and around Portland, Oregon, and Vancouver and nearby towns of the state of Washington.

Respectfully submitted:
H. M. Greene, Chairman
Thomas E. Griffith
Archie C. Van Cleve
J. C. Ghormley
E. W. Howard

Upon motion duly made and seconded, it was voted that this report be accepted and placed on file.

Report of Committee on Clinics

Dr. Ralph A. Fenton, chairman, presented the following report:

There has been considerable complaint from the medical profession, particularly in the larger centers like Portland, that free medical aid is being administered without proper investigation being made into the financial status of the people treated. This criticism without question has been justified in a good many instances, but the primary cause for this evil has been the lack of membership of physicians on the directing bodies of the various organizations which administer free medical aid.

The committee has been in touch with one or two efforts which have been made to correct this unsatisfactory situation. An important step was taken when Dr. Stricker, as State Health Officer, called a meeting of the various agencies which administer medical relief in Portland with the view of working out some standardized procedure for determining the elegibility of persons who seek medical charity. A committee on which the medical profession has representation has been appointed to establish such standards and it is very likely that all the organizations, under whose auspices free medical service is given in Portland, will soon be following the same procedure in admitting persons who seek their assistance.

The children's clinics, which have been inaugurated during the past few years by the Visiting Nurse Association, have brought particular criticism from numerous physicians. Steps have also been taken to remove the cause of this criticism by adopting the suggestion of one of the members of our committee to have an advisory committee of physicians appointed to aid in the directorship of these clinics. Under the suggested plan, this committee will consist of the physician member of the State Child Welfare Commission, two members from the faculty of the University of Oregon Medical School, and two members from the Portland City and County Medical Society. The committee believes that the constructive participation of the medical profession in directing the administration of medical charity will do much to obviate the abuses which have developed largely as a result of the uncontrolled activities of lay health organizations.

Respectfully submitted:

Ralph A. Fenton, Chairman
Richard B. Dillehunt
W. B. Holden

Upon motion duly made and seconded, it was voted that this report be accepted and placed on file.

Report of Committee on Prevention of Blindness

Dr. Frederick A. Kiehle, chairman, presented the following report:

During the past year your committee has been instrumental through the office of the Executive Secretary in distributing a considerable amount of literature containing information dealing with problems concerned with the conservation of vision. We have also established contact by correspondence with a number of individuals and organizations interested in problems of this type. We would be glad to be consulted more frequently by school authorities and industrial companies with a view of giving them the latest information available on the subject of saving eyesight of employees and of school children.

During February, Miss Mildred G. Smith of the Executive Staff of the National Society for the Prevention of Blindness spent two weeks in Oregon. Part of this time was devoted to trips through the state for contacts with oculists and school nursing authorities. Her time in Portland was similarly spent. She addressed at the Public Library the Convention of County Nurses then being held in Portland and had a large and enthusiastic audience, who listened attentively to her instructive talk, with demonstration methods of examination of children who have not yet arrived at school age. The chairman of your committee had the pleasure of contributing to the discussion that followed this demonstration.

The final contribution of the year comprised a short talk by your chairman before the public meeting held in connection with the State Medical Society at La Grande, May 16. This was along the general lines of conservation of vision in the home, school and industry, and was illustrated by a large number of stereoscopic slides loaned for the occasion by the National Society for the Prevention of Blindness.

Respectfully submitted:

Frederick A. Kiehle, Chairman
Lee B. Bouvy
Clinton T. Cooke

Upon motion duly made and seconded, it was voted that the foregoing report be accepted and placed on file.

Report of Welfare Committee

In the absence of Dr. John H. Fitzgibbon, chairman, the executive secretary read the following report:

The Welfare Committee has continued its efforts to interest leading insurance companies in a welfare plan for our society. So far our efforts have met with no success, but, as negotiations are still going on, we hope to present a definite plan at a later meeting.

Respectfully submitted:

John H. Fitzgibbon, Chairman
W. P. McAdory
Frank R. Mount

Upon motion duly made and seconded, it was voted that this report be accepted and placed on file.

Report of Committee on Honorary Membership

In the absence of Dr. John F. Dickson, chairman, the executive secretary read the following report:

Your committee takes great pleasure in suggesting the names in the following list of members whom they consider should be put upon the Honorary Membership Roll of this Society. They have been members for many years; their lives and achievements in the practice of their profession are known to all of us and they have well earned a place on the list.

Dr. John E. Weeks, formerly of New York, internationally known as the discoverer of the Koch-Weeks bacillus, as the author of a classic work on Diseases of the Eye, as well as many other contributions to medical science is now a resident of Portland, and the Committee feels that it would be a great honor to this Society to place his name upon the Honorary Membership Roll.

The names of these recommended for Honorary Membership are as follows:

Dr. A. J. Giesy, Past President of the Oregon State Medical Society; Dr. E. A. Pierce, Past President of the Oregon State Medical Society; Dr. George F. Wilson, Past President of the Oregon State Medical Society; Dr. C. H. Wheeler, Past President of the Portland City and County Medical Society; Dr. Calvin S. White, Past President of the Oregon State Medical Society; Dr. Philo E. Jones; Dr. John E. Weeks, famous ophthalmologist from New York now residing in Oregon.

Respectfully submitted:

John F. Dickson, Chairman
Clyde T. Hockett
R. J. Pilkington

After considerable discussion, upon motion duly made and seconded, it was voted that Drs. Philo E. Jones, John E. Weeks, and Calvin S. White be recommended to the Society for election to honorary membership.

Report of Committee on Revision of Constitution and By-Laws

Dr. C. L. Booth, chairman, reported that the committee had no new recommendations to present to the House and that the only matters relating to the work of his committee were the amendments to the Constitution and By-laws proposed at the last annual session and now awaiting the action of the House.

Report of Committee on New Business

In the absence of Dr. J. Earl Else, chairman, the executive secretary reported that the substitute provision in the pending amendments to Chapter 8 of the By-laws had been prepared and was ready for the consideration of the House. Upon motion duly made and seconded it was voted that the amendments to Chapter 8 of the By-laws as proposed at the last annual session together with the substitute amendment prepared by the Committee on New Business be taken from the table.

After some discussion upon motion duly made and seconded, it was voted to adopt the following amendments to Chapter 8 of the By-laws, subject to the approval of the Society in general session:

To insert after the words, "A Committee on Auditing and Appropriations," in Section 1, the words, "A Committee on Public Education."

To insert after the word, "to," in the last line of Section 4, the words, "strictly scientific."

To insert as Section 7 the following words: "The Committee of Public Education shall represent the Society in the education of the public through newspaper articles and otherwise, and shall supervise the publication of news items and the distribution of health literature. It shall hold public meetings throughout the state for the discussion of health topics as often as in the judgment of the Council is desirable."

To renumber Section 7 as Section 8.

Report of Committee on Unfinished Business

In the absence of Dr. C. J. McCusker, Chairman, the executive secretary reported that the only unfinished business awaiting action was the amendment to Chapter 7 of the Constitution which was proposed at the last annual session and was now ready for final action by the House.

Upon motion duly made and seconded, it was voted that this matter be taken from the table.

After some discussion, upon motion duly made and seconded, it was voted to amend the first sentence of Chapter 7 of the Constitution, subject to the approval of the Society in general session, to read as follows: "The Council shall consist of nine councilors, the officers of the society, the retiring president, and any officer or delegate of the American Medical Association residing in this state."

Report of Committee on Resolutions

At the request of Dr. Joseph A. Pettit, Chairman, the executive secretary reported the sending of the following telegraphic message of sympathy to Dr. George W. Crile:

Oregon State Medical Society in regular session assembled has heard with extreme regret of the terrible disaster that has befallen your splendid institution. Accept our deep sympathy in this hour of distress.

Upon motion duly made and seconded, the following resolutions prepared by the committee were adopted:

The House of Delegates of the Oregon State Medical Society by unanimous vote extends to Dr. Charles J. Smith its best wishes and its appreciation of the faithful service and wonderful work he has done for the organization for many years.

The House of Delegates of the Oregon State Medical Society extends by unanimous ballot a vote of thanks to the city of La Grande, the Chamber of Commerce and the local profession for the splendid hospitality extended at its annual session May 16-18, 1929.

Upon motion duly made and seconded it was voted that the report of the Committee on Necrology be presented at the general session of the society. In the absence of all the members of the committee, President Bouvy appointed Dr. William Kuykendall to prepare and present this report.

Report of Committee on Nominations

Dr. E. B. McDaniel, Chairman, presented the following recommendations of the committee:

President-Elect, John W. Sifton, Hood River.
First Vice-President, J. Earl Else, Portland.
Second Vice-President, E. L. Zimmerman, Eugene.
Third Vice-President, Thomas E. Griffith, The Dalles.
Secretary, Frederick D. Stricker, Portland.
Treasurer, R. H. Wellington, Portland.
Councilors for the three year term expiring in 1932: Third District, W. B. Morse, Salem; Sixth District, E. A. Sommer, Portland; Seventh District, E. B. McDaniel, Portland.
Delegate to the American Medical Association, William Kuykendall, Eugene.
Alternate Delegate to the American Medical Association, E. B. McDaniel, Portland.
Member of Committee on Publication, three year term expiring in 1932, A. G. Bettman, Portland.

Upon motion duly made and seconded, it was voted that this report be accepted and submitted to the general session of the society.

At 9:00 a.m. the House adjourned sine die.

GENERAL BUSINESS SESSION OF THE SOCIETY

Friday, May 17

The business session of the society was called to order by President Lee B. Bouvy at 2:00 p.m., in the Chieftain Ballroom at Sacajawea Inn.

Report of Committee on Necrology

In the absence of all members of the committee, the secretary read the following names of physicians who had died since the last meeting:

R. J. Conroy, Medford, September 12, 1928.
Louis A. Shane, Portland, October 1, 1928.
S. F. Sharp, Athena, October 3, 1928.
L. S. Pickens, Condon, October 10, 1928.
Chesney L. Dutton, Eugene, October 15, 1928.
Thomas W. Kirby, Portland, October 16, 1928.
Milo Kirkpatrick, Portland, October 23, 1928.
Henry D. Stewart, Klamath Falls, October 24, 1928.
Albert Schneider, Portland, October 26, 1928.
W. H. McClure, Mollala, November 7, 1928.
R. A. Jayne, Elgin, November 7, 1928.
W. E. Brownell, Elgin, November 7, 1928.
Oliver P. Low, Portland, November 9, 1928.
David Rafferty, Portland, November 28, 1928.
William R. Shinn, Portland, December 24, 1928.
O. C. Doane, The Dalles, January 6, 1929.
Albert Carey, Roosevelt Camp, January 15, 1929.
Luther E. McDougal, Eugene, February 1, 1929.
W. H. Byrd, Salem, February 4, 1929.

Garrett L. Hynson, Portland, February 17, 1929.
J. C. Campbell, Klamath Falls, February 19, 1929.
J. H. Robnett, Albany, March 13, 1929.
Alva D. Walker, Portland, March 30, 1929.
Theodore Malmgren, Phoenix, April 3, 1929.
John H. Montgomery, Portland, April 12, 1929.

Report of House of Delegates

The Secretary made the following report of the actions of the House of Delegates:

To the Members of the Oregon State Medical Society:

I desire to submit the following summary of the proceedings of the House of Delegates:

1. The House voted to go on record as favoring a statewide campaign of immunization against scarlet fever, diphtheria and smallpox among children under ten years of age.

2. The Committee on Public Policy recommended that steps be taken to secure the passage of a basic science law by the initiative at the general election to be held in November, 1931.

3. Attention was called to the healthy financial condition of the society. The total assets of the society on April 30, 1929, including cash on hand, investments, and the value of office furniture and fixtures was $28,032.89. This splendid showing has been made possible because almost the entire operating expense of the society is being met by the funds allocated to the Oregon Public Health League.

4. The Committee on State Industrial Affairs reported the drafting of a new schedule of fees for State Industrial accident work and the holding of a preliminary conference with the State Industrial Accident Commission.

5. The House voted to recommend the election to honorary membership of Drs. John E. Weeks, Calvin S. White, and Philo E. Jones of Portland.

6. The following amendment to the Constitution, proposed for the first time at the last annual meeting of the society, was approved and is submitted for final action by the society; that Article 7 be amended to read: "The Council shall consist of nine councilors, the officers of the society, the retiring president, and any officer or delegate of the American Medical Association residing in this state." The object of this amendment is to add to the Council the retiring president, so that his valuable services to the society may continue.

7. The following amendments to Chapter 8 of the By-Laws, proposed for the first time at the last meeting of the society, were approved by the House and are presented for the final consideration of the society:

That a new standing committee be created by inserting after the words, "A Committee on Auditing and Appropriations," in Section 1, the words, "A Committee on Public Education."

That the scope of the Committee on Publication be confined to questions dealing with the publication of scientific matters by inserting after the word "to," in the last line of Section 4, the words "strictly scientific."

That the functions of the new Committee on Public Education be defined by inserting as Section 7 the following words: "The Committee on Public Education shall represent the society in the education of the public through newspaper articles and otherwise, and shall supervise the publication of news items and the distribution of health literature. It shall hold public meetings throughout the state for the discussion of health topics as often as in the judgment of the Council is desirable."

That the present section 7 be renumbered as Section 8 in order that the various sections of this chapter of the By-Laws may appear in proper serial order.

Respectfully submitted:
Frederick D. Stricker, Secretary.

Upon motion duly made and seconded, it was voted that the actions and recommendations of the House of Delegates as set forth in the Secretary's report be approved.

Election of Officers

The Secretary reported that the House of Delegates had voted to recommend the following list of nominees for the various offices of the society during the ensuing year:

President-Elect, John W. Sifton, Hood River.
Vice-President, J. Earl Else, Portland.
Second Vice-President, E. L. Zimmerman, Eugene.
Third Vice-President, Thomas E. Griffith, The Dalles.
Secretary, Frederick D. Stricker, Portland.
Treasurer, R. H. Wellington, Portland.
Councilor for Third District, W. B. Morse, Salem.
Councilor for Sixth District, E. A. Sommer, Portland.
Councilor for Seventh District, E. B. McDaniel, Portland.
Delegate to the American Medical Association, William Kuykendall, Eugene.
Alternate Delegate to the American Medical Association, E. B. McDaniel, Portland.
Member of Committee on Publication, three year term expiring in 1932, A. G. Bettman, Portland.

There being no further nominations from the floor, these nominees were duly elected to their respective offices.

President Bouvy expressed his thanks to the society for the honor of having served as its president, following which he announced that it was now in order to seat the new president, Dr. Wilson Johnston. Dr. Johnston was then escorted to the chair.

Dr. Bouvy congratulated the new president and presented to him, as executive officer, a gavel which Dr. Bouvy had had made as a gift to the society. The gavel was made from Oregon crab apple wood, given to Dr. Bouvy by Alfred C. Kinney, first president of the society, and used by him in making a table in 1872.

Numerous members expressed their appreciation of Dr. Bouvy's splendid gift. Upon motion duly made and seconded, a vote of thanks was extended to Dr. Bouvy and the gavel formally accepted by the society.

Dr. Johnston then expressed his gratification at the honor which had been conferred upon him by his election to the presidency of the society and pledged himself to carry on the work of that office with all the earnestness and vigor at his command.

The business session of the society was declared adjourned at 2:45 p.m., and the society assembled in scientific session.

ANNUAL BANQUET

The annual banquet of the Oregon State Medical Society was held in the banquet room at Sacajawea Inn on Friday, May 17, at 7:00 p.m.

Dr. W. P. McAdory was toastmaster. Dr. William J. Mayo was the first speaker called upon, who gave a brief talk on the great work of the early practitioners of medicine.

Dr. William Kuykendall told of the history and founders of the society and paid tribute to Dr. Alfred C. Kinney, first president.

Dr. Kuykendall then made the following remarks in memory of the physicians of the state who had died since the 1928 meeting of the society: It has fallen to me to say a few words at this time to the memory of our fellows who have fallen by the wayside since last we met. The size of the group is rather remarkable. Full twenty-five have dropped out of our ranks, have gone West. I like that term which grew up during the war time—"gone West," gone toward the setting sun. If you follow the setting sun you are always in the sunshine, you keep ahead of the band of shadows.

So I am thinking of our good fellows who have left us, as being out of the shadows into the light. If this is so, why should we mourn for them. They would not have it so. They would only wish us to carry on faithfully the work they have just laid down. If perchance they are to sleep, may their rest be peaceful and sweet and may the fragrance of their unselfish deeds and kindly ministrations forever sing requiems over their resting place.

No resolutions that we may pass, no flowers we may lay on their graves can help or bless them now. Could they speak out of the silence they would say, send flowers to the living, say the word of cheer to the man next door who needs it, do the kindly deed that we would have done had we remained with you. With this resolve firmly in our minds let us stand a moment in their memory. (Taps were then sounded for the departed members.)

Dr. George Swift of Seattle spoke briefly, emphasizing the value of attending medical meetings.

Mr. Paul Davis, executive secretary of the Idaho State Medical Association, brought greetings from his organization and gave a humorous talk.

Dr. Wilson Johnston, incoming president, spoke of the problems confronting the society and the importance of the work ahead in educating the public in matters of health and the aims of scientific medicine.

OREGON PUBLIC HEALTH LEAGUE

REPORT OF ANNUAL MEETING AT SACAJAWEA INN, LA GRANDE.

Thursday, May 16, 1929

The annual meeting of the Oregon Public Health League was called to order by President E. A. Sommer at 6:30 p.m. in the banquet room of Sacajawea Inn.

The following officers were present: E. A. Sommer, C. L. Booth, H. J. Clements, Frederick D. Stricker, E. B. McDaniel, Ralph A. Fenton, Wilson Johnston, Joseph A. Pettit, and the executive secretary. The following directors were present: Lee B. Bouvy, T. Homer Coffen, J. Earl Else, William Kuykendall, C. Ulysses Moore, W. B. Morse, Hugh S. Mount, E. B. Pickel, and R. J. Pilkington. The following members were present: W. W. Baum, A. G. Bettman, H. M. Bouvy, W. H. Bueermann, A. D. Dykmen, Thomas E. Griffith, George E. Houck, Franklin P. Johnson, Leslie S. Kent, Frederick A. Kiehle, W. P. McAdory, C. C. Moore, Luther T. Nelson, Oliver M. Nisbet, David H. Rand, Sherman E. Reese, D. R. Ross, Goodrich C. Schauffer, John W. Sifton, R. H. Wellington, E. L. Zimmerman. The following visitors were present: Paul Davis of Boise, Dr. F. H. Falls of Chicago, and Clarence A. Smith of Seattle.

Upon motion duly made and seconded, it was voted to dispense with the reading of the minutes of the last meeting, the same having been printed in the November, 1928, number of NORTHWEST MEDICINE.

Dr. Sommer announced that, on account of the public meeting to be held at 8 o'clock, it would be necessary to expedite the transaction of business as much as possible.

Report of Treasurer

In the absence of Dr. C. J. McCusker, Treasurer, the executive secretary presented the following report of the finances of the League, as prepared by P. W. Janney, certified public accountant:

SUMMARY OF CASH RECEIPTS AND DISBURSEMENTS FOR THE EIGHT MONTHS ENDED APRIL 30, 1929

Balance at beginning of period	$2,580.15	
Receipts—Oregon State Medical Society	3,970.00	
Total		$6,550.15
Disbursements		
Salaries	3,114.64	
Office Supplies and Expense	86.67	
Postage and Express	15.13	
Telephone and Telegraph	18.20	
Rent	235.00	
Traveling Expense	184.91	
Publicity	152.40	
Legislative Expense	524.75	
Office Furniture	96.20	
Auditing	62.50	4,490.40
Balance—April 30, 1929		$2,059.75

STATEMENT OF NET WORTH AS AT APRIL 30, 1929

ASSETS		
Cash in Bank	$2,059.75	
Members Dues Receivable	2,813.50	
Office Furniture	222.70	$5,095.95
LIABILITIES		
Unpaid Warrants	435.95	
Unearned Dues	4,169.50	4,605.45
Net Worth		490.50
		$5,095.95

Upon motion duly made and seconded, it was voted that this report be accepted and placed on file.

Due to the lack of time the executive secretary confined his report to a brief summary of the activity of the League at the recent session of the legislature.

Paul Davis, executive secretary of the Idaho Public Health League, made a brief talk on the legislative activity of his organization.

Dr. Sommer then announced that in his opinion the League should endeavor to secure the enactment of a basic science act by the use of the initiative, and that he wished to secure the opinions of those present regarding the desirability of this action. A general discussion of the basic science act and the desirability of securing its passage by means of the initiative then followed.

The following speakers expressed their opinions briefly concerning medical legislation generally and the basic science act in particular: T. Homer Coffen, Thomas E. Griffith, George E. Houck, Leslie S. Kent, William Kuykendall, C. C. Moore, W. B. Morse, E. B. Pickel, R. J. Pilkington, John W. Sifton, Clarence A. Smith, and Frederick D. Stricker. All of those present appeared to be heartily in favor of Dr. Sommer's proposal to secure the enactment of a basic science law through the initiative. Dr. Sommer then announced that work would be started in the early fall toward drafting a satisfactory law and that petitions would be drawn up and placed in the hands of physicians and other interested persons throughout the state.

Election of Directors

The following nominations were made for the office of director for the three year term ending in 1932:

Robert C. Coffey, Portland.
J. Earl Else, Portland.
Thomas E. Griffith, The Dalles.
Noble Wiley Jones, Portland.
Hugh S. Mount, Oregon City.
William Kuykendall, Eugene.

Upon motion duly made and seconded, it was voted that the nominations be closed and the executive secretary instructed to cast a unanimous vote for the above named candidates. The executive secretary, as instructed, cast the unanimous vote for these candidates and they were declared elected.

The meeting adjourned at 7:45 p.m.

IDAHO STATE MEDICAL ASSOCIATION

PROCEEDINGS OF THE THIRTY-SEVENTH ANNUAL MEETING OF IDAHO STATE MEDICAL ASSOCIATION, LEWISTON, IDA., JULY 5-6, 1929.

HOUSE OF DELEGATES

First Session

July 4, 8:30 p.m.

Call to order by the president, Dr. H. P. Ross. Roll call showed the following delegates and officers present:

Canyon County Medical Society: A. G. O. Kellogg, Geo. R. Proctor; Idaho Falls: H. L. Willson; Kootenai County: Alexander Barclay, Alt.; Nez Perce County: W. O. Clark, Wm. P. H. Habel; Pocatello Medical: W. F. Howard, D. C. Ray; Southwestern Idaho: J. C. Woodward; South Side Medical: D. L. Alexander, Geo. C. Halley. Bonner County, Shoshone County, Tri-County and Upper Snake River Medical Societies were not represented at this or the succeeding meetings of the House of Delegates. Council: H. D. Spencer, D. E. Cornwall; officers: H. P. Ross, J. N. Davis.

The president appointed the following committee on credentials: H. D. Spencer, D. E. Cornwall, J. L. Stewart.

Moved by Dr. Barclay, seconded by Dr. Habel that the next meeting of the House by called for 4 p.m. July 5. Carried.

Second Session

July 5, 4 p.m.

President H. P. Ross in the chair. Roll call.

Canyon County: A. G. O. Kellogg, G. R. Proctor; Idaho Falls: H. L. Willson; Kootenai County: Alexander Barclay; Nez Perce County: W. O. Clark, W. P. Habel; Pocatello: W. F. Howard, D. C. Ray; Southwestern Idaho: J. C. Woodward; South Side: D. L. Alexander, G. R. Halley. Councillors: H. D. Spencer, D. E. Cornwall, J. L. Stewart; officers: H. P. Ross, J. N. Davis.

Committee on credentials reported all delegates properly accredited.

Upon motion this report accepted and committee discharged.

Minutes of the 1928 meeting read.

Report of the Secretary-Treasurer

Moved by Dr. Barclay that the action of the House of Delegates regarding issuing honorary membership to all ex-members at age of 65 be corrected to read ". . . and who are financially unable to pay." Motion lost for want of a second, and minutes approved as read.

Moved that this report be accepted when audited by the council. Report of the Secretary-Treasurer attached hereto as Exhibits "A," "B," "C."

Moved and seconded that the proposed amendment to the By-Laws of the association as recommended in the secretary's report be accepted as its first reading in accordance with the By-Laws and laid on the table for twenty-four hours. Carried.

Report of the Legislative Committee

Dr. J. L. Stewart, Chairman

Report read and attached hereto as exhibit "D." Moved by Dr. Alexander, seconded by Dr. Howard, that the report be accepted and made a part of the records of the society. Carried.

Report of the Scientific Committee

Dr. A. M. Newton, Chairman

Report accepted and attached hereto as exhibit "E."

Report of the Cancer Committee

Dr. D. L. Alexander, Chairman

Report accepted and attached hereto as exhibit "F."

The following committees made no report: Dental Cooperative Committee, Pharmacy Cooperative Committee, Industrial Committee, Periodic Health Examination Committee, Hospitals Committee, Tuberculosis Committee, Military Affairs Committee, Necrology Committee.

Dr. Stewart offered the following names for honorary membership: Dr. W. F. Smith of Boise, Dr. O. W. Hall of Star, Dr. John Hamer of Middleton. Moved by Dr. Davis and seconded by Dr. Alexander that upon recommendation of their component societies honorary membership be extended these doctors. Carried.

Moved by Dr. Barclay, seconded by Dr. Howard that the chair appoint a delegate to the U. S. Pharmacopeal Convention for 1930. Carried.

The president appointed the following committees:

Resolutions Committee: W. P. Habel, W. F. Howard, J. C. Woodward.

Nominating Committee: D. E. Cornwall, A. M. Newton, G. R. Proctor.

Moved by Dr. Alexander, seconded by Dr. Halley, that the South Side Medical Society be and is hereby declared a part of the East Councillor District. Carried.

Adjourned to meet at the call of the chair.

Third Session

President H. P. Ross in the chair. Roll call.

Canyon County: A. G. O. Kellogg, G. R. Proctor; Idaho Falls: H. L. Willson; Kootenai: Alexander Barclay; Nez Perce: W. O. Clark, W. H. P. Habel; Pocatello: W. F. Howard, D. C. Ray, A. M. Newton; Southwestern Idaho: J. C. Woodward; South Side: D. L. Alexander, G. C. Halley. Council: H. D. Spencer, D. E. Cornwall, J. L. Stewart; officers: H. P. Ross, J. N. Davis.

Minutes of earlier meetings read and approved.

Proposed amendment to the By-Laws, by the addition of Sec. 4 to Chapter 1, read for final consideration:

Sec. 4. When a physician applies for membership, or when an application is made to be received on transfer the secretary of the component society shall forward his name and address to the biographic department of the American Medical Association for such information as may be on file relative to his record and no member shall be enrolled or accepted on transfer until this provision shall have been carried into effect.

Moved by Dr. Barclay, seconded by Dr. Woodward, the adoption of the amendment. Carried.

Election of Officers

Report of Nominating Committee:

President-Elect, J. N. Davis; Secretary-Treasurer, H. W. Stone; Councillor East District, C. W. Pond; Associate Editor (Wallentine), J. T. Wood; Delegate, A. M. A. (two years), G. R. Proctor; Alternate, A. M. A. (two years), W. F. Howard; Scientific Committee, A. M. Newton, D. L. Alexander; Public Health and Legislation, F. A. Pittenger, E. N. Roberts, Alexander Barclay.

Nomination being declined by Dr. Davis, for the office of President-Elect, the following were nominated from the floor: H. W. Stone, J. H. Crampton, D. E. Cornwall. On the second ballot D. E. Cornwall received the majority of votes cast and was declared elected to the office of President-Elect.

For the office of Secretary-Treasurer in addition to H. W. Stone, the name presented by the Nominating Committee, J. N. Davis, was nominated from the floor. Upon ballot Dr. Davis received the majority of the votes cast and was declared reelected to the office.

Moved by Dr. Halley, seconded by Dr. Barclay, that the report of the Nominating Committee regarding the other elective offices be accepted and the secretary be instructed to cast the unanimous vote of the House. Carried. The officers as indicated above declared elected.

Resolutions Committee

Resolution No. 1

Resolved that the annual dues for the coming year be continued as they are at $40.00 per capita payable on the first day of January, 1930.

Signed: W. P. Habel, Chairman
W. F. Howard
J. C. Woodward

Resolution No. 2

Resolved that the association extend its appreciation and thanks to the people of Lewiston for their hospitality to the visiting physicians and their families, and further that their eagerness to make us happy has added greatly to the pleasure of this visit to Lewiston.

Be it further resolved that we express our gratitude to the Nez Perce County Medical Society for the many favors shown the visiting doctors.

Signed: W. P. H. Habel, Chairman
W. F. Howard
J. C. Woodward

Resolution No. 3

Whereas, The National Safety Council, The American Red Cross, The U. S. Navy, The U. S. Army and numerous large corporations operating in the United States have approved and are using the application of the Schaefer or Prone Pressure Method where artificial respiration is necessary because of gas poisoning, electric shock or drowning, and

Whereas, The Schaefer or Prone Pressure Method of artificial respiration has received the serious consideration of this association, now, therefore, be it

Resolved, that the Idaho State Medical Association, convened in Lewiston, Idaho, this 6th day of July, 1929, does approve the Schaefer or Prone Pressure Method, and does sanction and recommend the application of this method in preference to all others where artificial respiration is deemed necessary because of gas poisoning, electric shock or drowning.

Signed: W. P. H. Habel, Chairman
J. C. Woodward
W. F. Howard
Committee

Moved and seconded that Resolution No. 1 be adopted. After considerable discussion a standing vote was called for, resulting in 9 ayes and 7 no's. The chair declared the resolution adopted.

Moved and seconded that Resolution No. 2 be adopted. Carried unanimously.

Moved and seconded that Resolution No. 3 be adopted. Carried unanimously.

Moved by Dr. D. C. Ray, seconded by Dr. Barclay, that conferring of honorary membership be left to the component societies. Carried.

Dr. Barclay of Coeur d'Alene extended an invitation to the Association to meet in that city for their annual session of 1930. Their being no further invitations it was moved by Dr. Stewart, seconded by Dr. Alexander, that this invitation be accepted. Carried.

Upon motion duly made the society was adjourned sine die.

J. N. Davis, Secretary-Treasurer.

Exhibit A

Secretary-Treasurer's Report

July 1, 1929.

At the time this report is written we have a 1929 membership of 130. Of this number 116 are active members, 3 are associate members and 20 are honorary members on account of age. To be exact, we have 21 honorary members, but one of this number is also an active member and listed as such. From the 1928 membership we have to report 53 delinquents. Our corresponding membership for this date last year was 152, of which 4 were associate members, and we had no honorary list. The total membership for 1928 was 179. To our membership of this date further accessions will be made, of course, before the close of the year. The present standing of component societies is as follows:

Bonner County	2
Canyon County	14
Idaho Falls	10
Kootenai County	5
Nez Perce County	16
Pocatello	25
Southwestern Idaho	21
Shoshone County	7
South Side	22
Tri-County	10
Upper Snake River	7

The charter for Bear Lake County Medical Society has been revoked for nonpayment of dues.

There remains in the Legal Fund $151.90 with the receipt in full from our attorneys. I suggest the closing of this fund and that the balance be transferred to the General Fund of the Society.

For the protection and welfare of the Association I wish to present the following amendment to the By-Laws of the Idaho State Medical Association:

The By-Laws of the Idaho State Medical Association shall be amended by the addition to Chapter 1 of Section 4, as follows:

Sec. 4. When a physician applies for membership, or when an application is made to be received on transfer, the secretary of the component society shall forward his name and address to the biographic department of the American Medical Association for such information as may be on file relative to his record, and no member shall be enrolled or accepted on transfer until this provision shall have been carried into effect.

J. N. Davis, Secretary-Treasurer.

Exhibit B

Auditor's Report

Dr. J. N. Davis, Secretary-Treasurer,
Idaho State Medical Society,
Boise, Idaho.

Dear Sir:

As requested by you I have audited the receipts and disbursements of your Association and submit herewith the following schedules: Receipts and Disbursements, Distribution of Receipts, Memerbeship Fees Receivable, Comparative Statement of Budget to Disbursements, Balance Sheet.

By reference to the Schedule of Receipts and Disbursements it will be noted that in order to pay the "Budget" it has been necessary to deplete the Reserves set up for "Legal," "Medical Defense" and "Local Societies," all of which, as I understand the motion creating the "Reserves," are meant to be in cash. This condition may be remedied by the collection of Delinquent Membership Fees or by increasing the income for the current year so that there will be a surplus over current budget allowances, sufficient to refund the deficit. The advance to Mr. Paul Davis when collected may also be applied.

The statement of "Distribution of Receipts" includes the Membership Fees of Dr. Edwin Cutler, $160.00, paid in by checks, of which $20.00 was deposited to be returned by the bank and no part of which has been collected to date. Also the membership of Dr. F. B. Evans $50.00, $10.00 of which was collected and $40.00 remains unpaid and Dr. F. A. Schmitz membership, the check for which is held for the action of the directors.

"Membership Fees Receivable" represents the unpaid balances due from members, the collection of which would give the Association a small surplus for use in the current year's "Budget." If these accounts are not collectable, it will leave the Association with a deficit for the period under audit.

As the expected expenditures for the period were budgeted at the beginning of the year, I have set up a comparative statement showing the amount allowed in the Budget and the actual disbursements during the year. Though some of the items show an over expenditure, the total disbursements show a saving of $275.29 less than the Budget allowance.

The "Balance Sheet" or statement of Assets and Liabilities is incomplete, as there is no record of furniture and fixtures in the records under audit. Any assets that the Association may own should be inventoried and placed on record so that they may be included in future statements.

There is apparently at least one Liability that does not appear, namely one month's rent of $30.00.

It might not be out of place at this time to call your attention to the fact that the 1928 Income Tax Law requires all associations or incorporated societies to file certain affidavits, etc., as to income in order to avoid the necessity of making annual income tax returns. If this has not already been done it should be attended to before March 15, 1929.

In closing I wish to thank Dr. Davis for the assistance given during the audit.

Yours very truly,
J. C. Osgood, Accountant.

Statement of Receipts and Disbursements
Period Ending December 31, 1928

Receipts		
Membership Fees	$8,236.00	
Paul Davis acct Refund on advance	300.00	
Total Receipts		$8,536.00
Add Cash on Hand beginning of period		382.59
		$8,918.59
Disbursements		
Advance to Paul Davis	500.00	
Furniture and Fixtures (Filing Case)	9.00	
Paid to County Societies	274.00	
Legal Fund	22.50	
Budget Expenses		
Salaries	5,252.65	
Printing, Paper and Postage	449.01	
Traveling Expenses	603.37	
Rent	330.00	
Periodicals	43.85	
Office Expenses	53.88	
Telephone and Telegraph	194.64	
Janitor	72.00	
Emergency Fund	725.31	
Total Disbursements		8,530.21
		388.38
Checks Returned Insufficient Funds		100.00
		288.38
Check of Dr. F. A. Schmitz held for approval		50.00
Cash in Bank		238.38

Comparative Statement of Budget to Disbursements
Period Ending December 31, 1928

	Budget Allowance	Actual Disbursement	Disbursements Over	Under
Salaries	$5,400.00	$5,252.65	$	$147.35
Printing, Paper, Postage	600.00	449.01		150.99
Traveling Expense	600.00	603.37	3.37	
Rent	360.00	330.00		30.00
Periodicals	50.00	43.85		6.15
Office Expense	50.00	53.88	3.88	
Telephone and Telegraph	150.00	194.64	44.64	
Janitor	72.00	72.00		
Emergency Fund	718.00	725.31	7.31	
	$8,000.00	$7,724.71		$275.29

Distribution of Receipts
Period Ending December 31, 1928

Membership Fees	
Legal Fund	$ 2.00
Local Societies	334.00
General Fund	7,821.00
Medical Defense	129.00
Miscellaneous Receipts	
Paul Davis Refund on Advance	300.00
	$8,586.00

Note: Above receipts include checks held for various reasons amounting to $150.00, which when returned should be charged back according to original distribution.

1928 Membership Fees Receivable

F. W. McManus	$ 30.00
J. C. Wick	30.00
J. O. Mellor	55.00
C. A. Meyers	30.00
G. R. Cutler	30.00
J. H. Murray	35.00
Joseph Fremstad	30.00
G. G. Fitz	35.00
C. P. Groom	20.00
L. F. Castle	20.00
J. E. Damron	50.00
Robert Gerlough	30.00
N. A. Olson	35.00
	$430.00

Balance Sheet
Period Ending December 31, 1928

Assets

Cash in Bank	$238.38
1928 Membership Fees Receivable	430.00
Paul Davis (Balance due in advance)	200.00
	$868.38

Liabilities

Legal Reserve	$437.50
Medical Defense Reserve	129.00
Local Societies Reserve	60.00
Surplus	241.88
	$868.38

Bank Reconciliation
December 31, 1928

Balance, as per Statement of Receipts and Disbursements		$238.38
Checks Outstanding:		
No. 50	$ 6.00	
No. 51	12.00	
No. 80	5.00	
No. 94	30.00	
No. 108	30.00	
No. 120	30.00	
No. 124	3.30	
No. 125	2.10	
No. 129	45.00	
No. 127	175.00	
No. 130	6.00	
No. 131	30.00	
No. 132	24.07	398.47
Balance per Bank Statement December 31, 1928		$636.85

Approved July 6, 1929.

James L. Stewart
H. D. Spencer
D. E. Cornwall

Exhibit C

June 30, 1929.

J. N. Davis, Secretary-Treasurer,
Idaho State Medical Association,
Kimberly, Idaho.

Dear Sir:

As requested by you, I have made statements of receipts and disbursements, also a list of unpaid membership dues.

The unpaid memberships are compiled from the last year's paid memberships without knowledge of members who may for some cause not now be active.

Very truly yours,
J. C. Osgood.

Statement of Receipts and Disbursements
Period Ending June 30, 1929

Receipts		
1928 Dues Received	$ 40.00	
1929 Dues Received	4,615.00	
Add cash on hand last report	238.38	$4,893.38
Disbursements		
Salaries	$2,455.00	
Printing	75.94	
Traveling	6.65	
Rent	180.00	
Periodicals	192.15	
Office Expense	243.22	
Telephone and Telegraph	142.35	
Janitor	31.00	
Emergency Fund	41.25	
Legal Fund	285.60	
Paid to County Societies	52.00	3,705.16
Balance on Hand		$1,188.22

Distribution of Receipts
Period Ending June 30, 1929

Membership Fees	
General Fund	$4,327.75
County Societies	238.00
Medical Defense	89.25
	$4,655.00

Medical Fees Receivable
as of June 30, 1929

	1928	1929
J. N. Alley		$ 40.00
F. Willis Almond		40.00
O. H. Avery		40.00
E. F. Balcom		40.00
H. P. Belknap		40.00
V. C. Belknap		40.00
John Boech		40.00
A. H. Bridge		40.00
A. B. Boech		40.00
E. J. Braddock		40.00
O. F. Call		40.00
A. R. Cutter	$ 30.00	40.00
L. F. Castle	20.00	
Edwin Cutler		40.00
A. J. Coats		40.00
J. E. Damson	50.00	40.00
W. T. Drysdale		40.00
W. J. Erchenbeck		40.00
J. H. Erickouse		40.00
F. B. Evans		40.00
T. E. Evans		40.00
J. M. Fairly		40.00
Leland Frazier		40.00
Joseph Fremstad	30.00	40.00
G. G. Fitz	35.00	
T. D. Farrer		40.00
J. W. Gue		40.00
C. L. Gritman		40.00
R. H. Greene		40.00
C. P. Groom	20.00	40.00
Robert Gerllough	30.00	40.00
C. F. Hammer		40.00
T. C. Hollister		40.00
C. A. Hoover		40.00
H. H. Hughart		40.00
E. L. Hargis		40.00
D. P. Higgs		40.00
O. P. Hamilton		40.00
A. C. Jones		40.00
G. O. A. Kellogg		40.00

F. W. McManns	30.00	
Thos. F. Mulless		40.00
J. O. Mellon	55.00	
C. A. Meyers	30.00	40.00
J. H. Murray	35.00	40.00
C. F. Mager		40.00
Parley Nelson		40.00
J. R. Nunbros		40.00
N. A. Olsen	35.00	40.00
O. D. Platt		40.00
Fred A. Pettinger		40.00
E. L. Patrick		40.00
G. T. Parkinson		40.00
F. M. Ray		40.00
H. C. Robinson		40.00
H. Rouse		40.00
F. M. Sprague		40.00
W. T. Sutherland		40.00
E. L. Simonton		40.00
C. F. Schlitz		40.00
J. L. Stewart		40.00
A. R. Soderquist		40.00
J. T. Wood		40.00
Chas. Wetherbee		40.00
J. C. Wich	30.00	40.00
N. R. Wallentine		40.00
R. H. Wright		40.00
G. A. Woodcock		40.00
J. R. Young		40.00
C. F. Zeller		40.00
	$430.00	$2,640.00

BALANCE SHEET
AS OF JUNE 30, 1929

Assets

Cash in Bank	$1,188.22
1928 Membership Fees Receivable	430.00
1929 Membership Fees Receivable	2,640.00
Paul Davis (Balance due on Advance)	200.00
	$4,458.22

Liabilities

Legal Reserve	$ 151.90
County Society Reserve	246.00
Medical Defense Reserve	218.25
Salaries Payable	220.00
Rent Payable	30.00
Surplus	3,592.07
	$4,458.22

BANK RECONCILIATION
JUNE 30, 1929

Balance on Hand January 1, 1929		$ 238.38
Deposits		4,655.00
		$4,893.38
Disbursements		3,705.16
Balance per Books		$1,188.22
Checks Oustanding:		
No. 80 J. O. Mellon	$ 5.00	
No. 130 Mrs. Edna McWilliams	6.00	
No. 204 Whitehead and Hoag Co.	12.45	
No. 205 Fred York Printing Company	17.38	
No. 207 Pacific Press Clipping Bureau	3.00	43.83
Balance per Bank Statement		$1,232.05

Approved July 6, 1929.

James L. Stewart
H. D. Spencer
D. E. Cornwall

Exhibit D

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION

July 5, 1929.

To the House of Delegates of the Idaho State Medical Association:

This committee has been extremely active during the last fiscal year or since the Yellowstone meeting. The 1929 legislative session was the most complicated of any we have had in recent years. Many problems were submitted to this committee for solution. We have endeavored to use our best judgment on every problem submitted so, if some of the things that have taken place under our guidance do not seem the correct solution to you, we would ask you to consider any mistakes in judgment as of the head rather than of the heart.

The chairman of your committee has been in daily contact with the business office and has held almost daily conferences with the business manager, Paul Davis. This has taken a great deal of time.

The last few months of 1928 were devoted to getting a complete line up and the laying of the foundation for our legislative program, as proposed by the House of Delegates at Twin Falls and at the Yellowstone meeting. It has always been the policy of this committee to consider legislation sponsored by us from the angle of its effect upon the people in our community and the whole state, for one of the fundamentals of all legislation is to keep away from class legislation, and during the last session of the Legislature only one bill became a law that could in reality be called selfish. I refer to one bill put through by this committee raising the fees of medical men called upon to testify at insanity hearings. Since Idaho was first admitted to the Union a physician was allowed $5.00 for each hearing, regardless of the amount of work involved or the distance traveled. This law that was put through by this committee allows a physician $10.00 for a hearing, but in complicated cases to be set at the discretion of the judge hearing the case. It also allows mileage.

The last two annual meetings of the Association have endorsed the so-called Basic Science Law. Such a bill was drafted by the business office in cooperation with Dr. Woodward, Legal Adviser of the American Medical Association. However, before this bill was introduced a proposal was made that the standards of all professions engaged in the healing art be raised. This presented a crisis and a meeting of the Council was called by President Ross and the matter thoroughly discussed from every possible angle. The Council instructed this committee, in cooperation with President Ross, to use their best judgment upon this particular departure from the Basic Science Law.

After a thorough study of the bill presented, together with our amendments, it was decided to back the new educational qualifications bill as submitted by the Department of Law Enforcement, if certain amendments as offered by us were accepted. This bill was introduced, passed both houses, and was signed by the Governor. It is now upon the statute books of this State. So, on and after July 1, 1934, all those engaged in the practice of the healing art must have two years in a college of letters and sciences as taught in the University of Idaho. If the applicant comes from another State, this two years course must be approved by the University of Idaho. This was the nearest definition we could work out for a two year premedic course. A study of the medical laws of other States shows that this is the highest standard required of any State in the Union. It is reported that the California law requires the osteopaths to have a one year premedic.

The "joker" in this bill was discovered to be upon the recognition of a two year college course. Chiropractors agreed to the passage of the bill as originally drawn, requiring a two year course, but in agreeing upon a two year course they considered the fact that they would say what constituted a university or college. Our amendment to the bill used the University of Idaho as the basis. The University of Idaho is a recognized school for a two year premedic course. So the amendment that we offer is sound and does not leave the recognition of premedic schools up to any of the professional boards but to the regents of the University of Idaho.

A tabulation of all bills and laws sponsored or opposed by the Association will be found in President Ross' annual message to this Board. I would urge that every member of the Association glance over these various items and, if more information is desired on any particular law or bill, it can be secured from the business office upon request.

This committee has encouraged the newspapers of Idaho to use articles on material having to do with disease prevention and public health. We have been able to secure the assistance of a large number of Idaho papers along this line. A clip sheet service furnished by Hygeia has been used very profitably. Other newspapers are using syndicated articles as prepared by Drs. Fishbein, Copeland, Evans and others. Over 100,000 bulletins pertaining to periodic health examinations have been forwarded from the business office. For the next four months a very effective collection system has been worked out by the business office, as it enables us to enclose articles pertaining to disease prevention to the people from one end of the State to the other. We think there are great possibilities in this idea.

This committee has endavored in every way to cooperate with the other officers of this Association and to follow out the mandates of the House of Delegates.

James L. Stewart,
Chairman.

Exhibit E

REPORT OF SCIENTIFIC COMMITTEE

The activity of the present committee consists in aiding in the preparation of the scientific program for 1929. The efficiency of J. N. Davis, present secretary, was such as to necessitate very little aid.

The committee suggests that in the future, when a member of the State society appears on the program, a copy of his paper be submitted to the secretary of the State society thirty days before the printing of the program.

A. M. Newton
D. L. Alexander

Exhibit F

REPORT OF CANCER COMMITTEE

Recommendations:

1. That a card be furnished by the State Association which will contain all information necessary in the report and follow-up of all cancer cases. These cards to be sent to every doctor in the State with a letter urging a report of all cases and a follow-up of same.

2. That a doctor in each community be designated to give educational talks before lay assemblies. The committee to work out some of the details for such talks and give such aid as necessary in way of information and lantern slides.

3. Each society devote at least one meeting yearly to cancer program.

D. L. Alexander, Chairman
Geo. C. Halley
A. M. Newton

SCIENTIFIC PROGRAM

The scientific program as published in NORTWEST MEDICINE, and by official program of the society, was delivered with but one change. Mrs. F. L. Christenson of Lewiston delivered the address assigned to Mr. Austin A. Walker of Boise.

The Association wishes to extend thanks to all essayists, both from without and within the organization, for their part in making this meeting a success. We deeply appreciate your efforts in bringing to our membership the information and enthusiasm that you did.

J. N. DAVIS, Secretary.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

SURGICAL PATHOLOGY. By William Boyd, M.D., M.R.C.P. Ed., Dipl. Psych., F.R.S. Can. Professor of Pathology, University of Manitoba, etc. Second Edition. Revised and Reset. With 474 Illustrations and 15 Colored Plates. 933 pp. $11.00. W. B. Saunders Co., Philadelphia and London, 1929.

Surgical technic has developed more rapidly than clinical surgical diagnosis. Efficiency in surgical diagnosis depends upon and presuposes a thorough knowledge of the fundamentals of "living pathology" and abnormal physiology. Surgeons have handicapped themselves by a lack of knowledge of these fundamentals or by a failure in keeping abreast of the new or more recent advances in these fields. They have been too content to rely upon the assistance of their associates in clinical medicine or pathology.

Bloodgood has done excellent service in emphasizing the need of the surgeon to become skilled in surgical pathology. As a surgeon-pathologist he can better serve his patient and also do more for surgery. This skill he can obtain from study of the fresh gross material from the operating room living pathology. Biopsy and subsequent microscopic sections are indispensable for those unfamiliar with surgical pathology or for confirmation of some doubtful condition. This entails a divided responsibility with a pathologist, one usually not versed in the clinical surgical aspects of the condition. Malignancy and benignancy are ultimately clinical and their diagnosis and responsibility for the same should rest upon the surgeon.

The author, in "Surgical Pathology" published in 1925, incorporated into his book those facts which he considered essential to a knowledge of surgical pathology. The material was obtained mainly from the laboratory of pathology of the University of Manitoba and in conjunction with the operating rooms of the Winnipeg General Hospital. This first edition was kindly received and filled a definite place in surgical teaching. This work has been rewritten, enlarged and brought up to date in the new edition, published in 1929. This author has the ability to obtain the gist, or substance, from the larger and more complete original monographs and to restate the essential facts in more concise, readable form. Thus, the recent new classification of brain tumors by Bailey and Cushing, the report of the Registry of Sarcoma Commission, the work of Wilkie on chronic cholecystitis and many other articles appear in condensed and more readily assimilable form.

The first part of the book is devoted to phases of general surgical pathology. Subjects, such as inflammation, healing, gangrene, hemorrhage, shock, tumors and so forth are considered from the surgical aspect rather than from the viewpoint of detailed pathology; these articles are well written and very interesting. In the portion devoted to special surgical pathology, the chapters assigned to thyroid gland, the stomach and duodenum, the gallbladder and liver, the breast, the diseases of bone impress one the more strikingly. These subjects are considered in more detail, are concisely yet comprehensively covered; they contain many facts helpful and interesting to the surgeon. The general tone of the book is didactic and as such may be highly recommended to the student as well as the surgeon. It is a helpful contribution for the teaching of surgery and the training of the surgeon.

CONRAD JACOBSON.

THE COLLECTIVE PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION FOR 1928, Volume XX. Edited by Mrs. M. H. Mellish, Richard M. Hewitt, M.D., and Mildred A. Felker, B.S. Octavo volume of 1197 pages with 288 illustrations. Philadelphia and London; W. B. Saunders Company, 1929. Cloth, $13.00 Net.

We look eagerly forward to the coming of each new Mayo Clinic volume as one of the great pleasures and privileges of the year, especially to those interested in general progress in internal medicine, surgery and medical research. For, since the beginning of the Mayo Foundation, the research work has become almost as valuable as the clinical papers have always been.

But it seems a great pity to the reviewer that both in speech and print the Mayos with their extraordinary ability and vast clinical experience, unique in all the world today, do not as formerly confine themselves to giving to the world the results of this experience instead of talking and writing on general medical topics and on subjects not purely medical. Thus in the present volume there are twenty-one papers written by the Mayos themselves but of these there are but two by William Mayo and four by Charles Mayo on what might be considered strictly technical medical subjects. The reason for this is probably that the Mayos are really "fed up" on them, every day routine diseases and operations (many of which are far from being of a routine nature to the average practitioner), and also that, because of their exalted position on the very pinnacle of medical fame, they are so often called upon to address large and mixed assemblages.

The article on splenomegalias by William J. Mayo is of great value because no other surgeon has begun to have had his experience in 500 splenectomies nor has had the opportunity of studying the whole subject of the spleen in its physiologic, pathologic and surgical aspects from this intimate knowledge of the living organ. Dr. C. H. Mayo, in his monograph on focal infection in chronic and recurring diseases, stresses the fact that in recurring diseases of the choroid, retina, iris and cornea the infection originates more often in the cervix in women and the prostate in men than from disease about the teeth or tonsils. Also he notes the frequency of arthritis of the finger joints in women associated with Heberden's nodes and here, again, he calls attention to the source of infection as commonly arising from the diseased cervix. Intercostal neuralgia he ascribes more often to oral infection. He does not mention gallbladder infection which has seemed to the reviewer a common source of rheumatism in women, and neuritis or neuralgia of the neck, shoulder and upper arm which in our experience has seemed more usually derived from oral infection.

The whole book abounds in valuable material from beginning to end as always, and it is as impossible to review as an encyclopedia. There is a very interesting report on two cases of Hirschsprung's disease in children, cured by Judd and Adson by lumbar sympathetic ganglionectomy and ramisectomy. The extraordinary benefit of the preliminary use of iodine, introduced by Plummer in 1922, in thyroidectomy for exophthalmic goiter is described in several papers and is considered by Sistrunk as the most important advance in any branch of surgery since the above date.

There is a very interesting account by Judd and Passalacqua of the use of oxygen in postoperative treatment of surgical cases, the patients being placed in a tent containing a 40 to 50 per cent oxygen atmosphere. Poor surgical risks undergoing much operative work, and those showing cyanosis and pulmonary edema, and actual pneumonia were the three classes treated. In the first two groups were 184 patients and all recovered without pneumonia, and in the third group of 32 postoperative pneumonia patients there were no deaths with the oxygen treatment. For twenty years this publication has been one of the most valuable for all classes of medical men and the only real object of the above remarks is to notify the profession of the birth of a new volume.

WINSLOW.

THE NOSE, THROAT AND EAR AND THEIR DISEASES. In Original Contributions by American and European Authors. Edited by Chevalier Jackson, M.D. Octavo volume of 1177 pages with 657 illustrations and 27 inserts in colors. Philadelphia and London; W. B. Saunders Company, 1929.

This is a beautifully edited compilation of modern thought on the diseases of the ear, nose and throat. It represents the product of years of experience of seventy-five international authorities. Each contributor has been called upon to present that phase of the work for which he is particularly fitted, either through laboratory research, clinical experience or both. The obvious enthusiasm with which each man has worked out his subject is the natural result of a familiarity and devotion for his work, all of which has lead to an energetic presentation of his assignment, which is not only informative and instructive but most readable.

Naturally, when such eminent men are called upon, there is a difference of opinion which enhances the value of the work, for it reminds us that this subject is very much alive, requiring individual thought rather than general acceptance of didactic statements. It is difficult in reviewing such a book to comment on the value of various articles because there would be no place to stop. In a work so advanced as this one, there is no one problem which has not been presented in a most practical way by those prepared to do so.

A most complete index permits a rapid location of the material wanted and a comparison of views of different men on the same subject, and for those who wish to delve deeper there is an extensive bibliography at the end of the various articles. As though this were not sufficient, the articles have been further backed up by hundreds of illustrations to assist in the visualization of anatomy, instruments and surgical technic, as well as over a hundred pictures in full color to illustrate various pathologic conditions. Because of its simple and yet adequate presentation of the subject matter, this book should prove of immense value to the general practitioner, as well as to the specialist who is seeking the very latest diagnostic and therapeutic advancements in diseases of the ear, nose and throat.

Fleischhauer.

The Climacteric (The Critical Age). By Gregorio Maranon, Professor of Medical Pathology in the Madrid General Hospital. Translated by K. S. Stevens. Edited by Cary Culbertson, A.B., M.D., F.A.C.S., Associate Clinical Professor of Obstetrics and Gynecology, Rush Medical College. 425 pp. $6.50. The C. V. Mosby Company, St. Louis. 1929.

Medical publications by Spanish authors are quite rare. The author states that the problem of the menopause comes up every day in the professional work of every physician. This condition is not merely a syndrome of genital insufficiency but is the biologic consequence of a complex and constant endocrine crisis. The general characteristics of the climacteric period are the reflection of a parallel state of functional irritability in the endocrine vegetative system which precedes the phase of frankly senile decline. The author states that the various symptoms, many of which are obscure, accompanying the menopausal crisis, can be explained by disturbance of some of the endocrines. The thyroid enters the situation in nearly every case, reacting to produce either hypo- or hyperthyroidism with accompanying symptoms. The author considers the suprarenal factor an active one at this stage, since this function experiences an increase of its activity in these years of crisis. While in the menopause the rule is for symptoms of hypopituitarism to appear, such as obesity and amenorrhea, at times hyperpituitary symptoms are presented, determining the well known condition of acromegaly. The author presents an interesting discussion of nervous, psychic, digestive and other symptoms associated with this critical period in the life of women. A woman, however, has no exclusive claim to a critical age since, the author asserts, a like condition exists in the male, although reactions are milder. As a rule this occurs later in man and the psychologic characteristics are different. Many nervous and vasomotor symptoms which men exhibit in the later years of life are thus attributed to endocrine alterations, emphasizing the author's belief in this critical age of man. The author's experiences with endocrine therapy in these cases is not particularly encouraging, being essentially a treatment of symptoms. Many phases of the subject are discussed which make this volume interesting reading.

Gonorrhea and Kindred Affections. Gonorrhea in the male, Chancroid and Verruca Accuminata. By George Robertson Livermore, M.D., F.A.C.S., Professor of Urology, Medical Department, University of Tennessee, etc. And Gonorrhea in the Female and Infectious Granulomata. By Edward Armin Schumann, A.B., M.D., F.A.C.S., Associate Professor of Obstetrics, University of Pennsylvania, etc. 257 pp. $5.00. D. Appleton & Co. New York and London, 1929.

This comprehensive work is a valuable contribution to these very important and prevalent human diseases. It embodies the principles of diagnosis and treatment of both male and female gonorrhea, and its many complications. It is unusual to find the discussion of the disease of both sexes so ably presented. While the authors have little to offer that is not now in general use, they have so compiled the various modes of procedure that they are easily comprehended and conclusive in their simplicity. In diagnosis of the infection the finding of the organism is conclusive in the chronic cases and in many of the complications, where the organism cannot be demonstrated, the complement fixation test is a valuable adjunct.

Time is all important in the beginning of the treatment, and gentleness and conservatism are to be employed throughout. In addition to the usual silver preparations, acriflavine and permanganate, the authors favor the use of graduated doses of vaccine and protein therapy which in their hands has given some startling results. They do not favor diathermy, except in certain complications, as epididimitis and salpingitis. Operative methods are indicated only after the conservative methods have failed.

The criteria of cure depend upon the absence of all clinical signs, repeated negative bacteriologic tests, and possible serologic findings. Smears from the cervix should be free not only from the gonococci but also from pus cells both prior to and following menstruation, and twenty-four hours after a provacative injection of 1 c.c. gonococcal proteose. The reviewer feels that this volume is a valuable addition to the literature and will be useful as a reference work not only to the less experienced physiciain but to the experienced one as well. Corlett.

The Normal and Pathologic Physiology of Bone. Its Problems. By R. Leriche, Professor de Clinique Chirurgicale a la Faculte de Strasburg, and A. Policard, Professor d'Histologie a la Faculte de Lyon. Translated by Sherwood Moore, M.D., Professor of Radiology, Washington University School of Medicine; and J. Albert Key, M.D., Assistant Professor of Clinical Orthopedic Surgery, Washington University School of Medicine. Illustrated. Cloth. 236 pp. $5.00. The C. V. Mosby Co. St. Louis.

This is a very interesting book, and a large quantity of material is contained in its two hundred odd pages. In order to follow the author's meaning, it is necessary to concentrate very closely. The reader will be rewarded, however, with some new conceptions regarding the physiology of bone. The chapters on "The Repair of Fractures" and "Bone Transplantations" will be found to contain some interesting ideas. The author's observation that the only good bone transplant is one which dies is somewhat revolutionary. Similarly, his theory regarding the function of the periosteum is a new one. The book is an excellent one, and should be in the library of those interested in this subject. One may safely prophesy that it will be widely quoted. Murray.

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NEUROLOGICAL EXAMINATION. An Exposition of Tests with Interpretation of Signs and Symptoms. By Charles A. McKendree, A.B., M.D., Associate, Department of Neurology, College of Physicians and Surgeons, Columbia University, etc. With Foreword by Henry Alsop Riley, A.M., M.D. Illustrated. 230 pp. $3.25. W. B. Saunders Co., Philadelphia and London. 1928.

The author states the purpose of this book is to familiarize the medical student and those interested in postgraduate specialization with a comprehensive and systematic form of examination of the central nervous system. While no attempt is made to describe disease pictures, many important syndromes which have localizing value are described in connection with the tests applied. The importance of a correct history is emphasized. The complaint should be recorded in the words of the patient rather than the scientific terms the examiner believes most descriptive. After specifying the details of a proper physical examination, each of the cerebral nerves is considered in detail, beginning with its anatomy, physiology and a description of normal and abnormal functions. Disease conditions, following the pathology of each nerve, are clearly described with the necessary methods of recognizing each. An extended examination blank is presented, covering all the details of examination, showing that when completely performed the task is by no means simple. The author states that when the examination has been completed it is well to note all pathologic findings together with the salient, outstanding points in the history. If the examination has been completely and carefully done, the matter of differential diagnosis may require days or weeks of fine analysis in order to arrive at a definite conclusion.

A TEXT-BOOK OF PHYSIOLOGY. For Medical Students and Physicians. By William H. Howell, Ph.D., M.D., Professor of Physiology in the School of Hygiene and Public Health, Johns Hopkins University, Baltimore. Tenth Edition, Thoroughly Revised. Octavo of 1081 pages, 308 illustrations. Philadelphia and London, W. B. Saunders Co., 1927. Cloth $6.50.

This text seems an admirable one for either the student or practitioner. It is written in a style that makes attractive reading. In discussing the many phases of physiology on which there are differences of opinion, the author is careful to present the different views and a brief outline of the facts on which they are based and references to the literature that enable the student to satisfy any curiosity he may have. When one finds positive statements in a book written from this point of view, he feels that they may be taken at their face value.

In giving modern views the author frequently points out those that were held in the more or less recent past and leaves the reader to draw his own conclusions as to the infallibility of the latest opinion. With the increasing amount of medical literature it is becoming impossible for one to even read all the reviews, but it behooves the practitioner to keep in touch with the fundamentals and he will perhaps find much in physiology that will be more valuable in his daily work than the most recent ideas on clinical medicine. Howell's text can be recommended as a safe place to get the fundamentals of physiology.

GRISWOLD.

A MANUAL OF DISEASES OF THE NOSE, THROAT, AND EAR. By E. B. Gleason, M.D., LL.D., Professor of Otology, Graduate School of the University of Pennsylvania. Sixth Edition, thoroughly revised. 12 mo. 617 pages, with 262 illustrations. Philadelphia and London. W. B. Saunders Company. 1929. Cloth, $4.50 net.

This textbook is excellent for students and general practitioners, giving essential facts in a very concise form. The diseases of the nose and throat are covered quite completely. The anatomic plates and illustrations all the way through are good. The chapter on the larynx is covered briefly. Bronchoscopy and esophagoscopy are no more than mentioned, and cover only one page. Even though the book is only intended for students and general practitioners, the indications for each should at least be given in brief. The diseases of the ear and their related subjects are covered quite fully. There is a useful collection of formulas in the appendix and a detailed description of the better methods of use of some of the more important drugs.

WEBER.

THE SURGICAL CLINICS OF NORTH AMERICA (Issued serially, one number every other month). Volume 9, Number 3. (New York Number, June 1929.) 299 pages with 125 illustrations. Per Clinic Year (February 1929 to December 1929), Paper $12.00, Cloth $16.00. Philadelphia and London. W. B. Saunders Company.

Leading surgeons of New York report on a variety of conditions in this volume. Heyd describes three cases of Riedel's trauma, a benign granuloma of the thyroid often mistaken for malignancy. The result of microscopic examination is generally very surprising, revealing a benign growth. This is, apparently, a chronic inflammatory disease of a granulomatous nature. In the Mayo Clinic forty-eight cases have been noted in 10,500 thyroidectomies. Various authors agree that Riedel's trauma occurs in glands of low vitality which show physiologic inefficiency. A discussion of operative treatment accompanies a report of cases. Lilienthal presents a case of lobectomy for primary carcinoma of lung, with a description of necessary technic. He also reports a case of avulsion of the phrenic nerve for pulmonary tuberculosis. Several reports appear dealing with fractures. A number of writers present unusual cases of carcinoma of abdominal organs. As usual, this is a very instructive volume.

THE MEDICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month). Volume 13, No. 1. (Boston Number—July, 1929) Octavo of 280 pages with 36 illustrations. Per Clinic Year, July, 1920 to May, 1930. Paper, $12.00; Cloth, $16.00 net. Philadelphia London. W. B. Saunders Company, March, 1929.

Many interesting forms of pathology are described in clinical reports of this volume. Morse discusses causes of difficult, noisy and rapid respiration in infancy and early childhood. Locke presents several cases of complete pneumothorax of unknown cause; Robey details five cases of aortic aneurysm with related pulmonary and other physical signs. Levine discusses a case of ulcerated gastric mucosa in the posterior esophageal wall which had been examined by numerous physicians and had received varied diagnoses. While malignancy was commonly designated, recovery of the patient proved the error of this diagnosis. Many other interesting cases are reported.

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ORIGINAL CONTRIBUTIONS

HYPERTHYROIDISM COMPLICATING PREGNANCY *

Frederick Howard Falls, M.S., M.D.
CHICAGO, ILL.

The thyroid gland has been known for centuries to undergo hypertrophy during pregnancy. The Romans were familiar with this phenomenon and there are references to it in all later medical literature. This enlargement has in recent years been ascribed to a compensatory hypertrophy occurring during pregnancy as an expression of the added need for the thyroid secretion, brought about by the demands of the altered metabolism of the pregnant state and the needs of the developing embryo.

The clinical manifestations of this increased activity of the thyroid gland vary with the individual patients and probably also to a considerable extent with the stability of the thyroid function in the nonpregnant state. The patients who present themselves for study in this connection may have, before becoming pregnant, hypothyroidism, normal thyroid function or hyperthyroidism. Hyperthyroidism, as has been pointed out by Litzenberg in a recent paper, may often cause sterility. He demonstrated by feeding thyroid extract and raising the basal metabolic rate that these patients became pregnant and went through normal pregnancy and labor, that the rate returned to subnormal after pregnancy and that sterility continued until the basal rate was again raised by feeding thyroid extract.

The woman with a normal thyroid function on becoming pregnant usually will give evidence of a mild hyperthyroidism, if the signs and symptoms of this condition are carefully looked for. Nervousness, tremor, vomiting, nausea, weight loss, sweating, enlargement of the gland and sometimes slight exophthalmos are frequently noted. In fact, many of these signs and symptoms have been pointed out for years by the obstetricians as signs of pregnancy without attempting to explain their fundamental significance.

The woman with a pronounced hyperthyroidism well developed relatively rarely becomes pregnant. Thus Mussey and his associates found only thirty-two women pregnant out of 5043 women who were treated in their clinic for exophthalmic goiter and ten pregnancies among 2000 women with toxic adenomata. Almost all of these women were in the childbearing age and it would seem that the incidence of pregnancy is unusually small. This may be due to the prostration evoked by the disease itself or to the atrophic changes brought about in the genitalia as first pointed out by Freund.

When pregnancy does occur, however, in these women a curious reaction may occur. In one group of women apparently the symptoms are greatly aggravated and this may be so extreme that immediate operation of the goiter becomes mandatory.

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* From the Department of Obstetrics and Gynecology, College of Medicine, University of Illinois.

*Read before the Fifty-fifth Annual Meeting of Oregon State Medical Society, La Grande, Ore., May 16-18, 1929.

On the other hand, the symptoms may be very greatly ameliorated and continue so until after the termination of the pregnancy, when the symptoms may return. In some cases there is only mild stimulation of the toxic symptoms.

It is not easy to explain what actually happens in these cases, but we believe that during pregnancy there is a stimulation of the sympathetic nervous system and all the glands of internal secretion. As a result of this stimulation there is a readjustment of these glands' relationship to each other and to the organism as a whole. When this readjustment takes place in the right direction, the goiter symptoms improve, but when it occurs in the reverse direction the toxic phenomena are aggravated. With this conception as a basis it is difficult to agree with the dictum of Gellhorn who maintains that a woman with an exophthalmic goiter should not marry; if she marries she should not become pregnant; if she becomes pregnant she should be aborted.

There is a group of women who have a pregnancy complicated by toxic adenomata. The basal rate and thyrotoxic symptoms are less pronounced in these cases as a rule. There may occur, however, serious symptoms due to pressure on the trachea and interference with respiration. Mussey warns especially in these cases against the indiscriminate use of iodine in the form of Lugol's solution. While this may hold good for the majority of cases, it is equally true in our experience that some of these toxic adenomata stand Lugol's solution well and improve clinically on this durg in moderate dosage.

Marine has shown that there is a true hypertrophy of the gland and hyperplasia of the secretory cells of the acini of the gland and an increase in the iodine content of the gland per gram of dried weight. These histologic changes can be prevented by the use of Lugol's solution in dosage of ten drops three times a day.

Finally, there is a group of women who present themselves with the picture of hyperemesis gravidarium, and in whom the clinical evidence of the thyrotoxicosis is completely masked by the hyperemesis. The more we have studied this phenomenon and have observed the reaction of these patients to the treatment for hyperthyroidism the more we are convinced that there may be a thyrotoxic element in most cases of hyperemesis. I pointed out this relationship in an unpublished paper read before the Northern District Meeting of the Indiana State Medical Meeting in 1915. Davis and Mussey have noted similar cases and I reported some cases in detail at the last meeting of the American Association of Obstetricians and Gynecologists and Abdominal Surgeons held in Toronto, Canada, last September. We have since observed several other cases which confirm this opinion and are shown in the accompanying tables.

We have also observed a few cases in whom the thyroid has been removed for exophthalmic goiter and the patients have later become pregnant. These patients are in our experience capable of going through with a pregnancy in a perfectly normal manner and without aggravation of their previous toxic symptoms. Labor came on and terminated spontaneously at about full term and in only one of the four was there a serious nervous break in the puerperium. We are, of course, inclined to supervise the prenatal care of these patients more closely than normal women. We give Lugol's solution if toxic symptoms supervene and advise against all unnecessary work and worry during the pregnancy.

The question frequently arises as to whether a pregnant woman, showing evidence of thyrotoxicosis especially of the exophthalmic type, should or should not be operated on for the goiter during the pregnancy. The answer of the surgeon and especially those with most experience in goiter surgery, as the Mayo clinic, Leahy of Boston, Nelson Percy and Seed of Chicago, is an emphatic yes. Their reason for this reaction is that, if a patient with a toxic thyroid showing symptom of crisis is put on Lugol's solution for a few weeks, she will improve and then if not operated on will relapse and go into another crisis even with bed rest and Lugol's solution.

We have felt some hesitancy in asserting a contrary opinion on the basis of a rather limited experience, but the facts in these cases are so diametrically opposed to the surgical viewpoint that we feel they must be expressed. Pregnant women with symptoms of exophthalmic goiter with basal metabolic rates in one case as high as plus 110 have been treated by bed rest, Lugol's solution and occasional mild sedatives over a period of months without serious aggravation of symptoms. They may be allowed to go into labor and to deliver spontaneously or with outlet forceps assistance. We have found by this method of handling these cases that the fetal mortality is that of normal pregnancy. In patients operated on during pregnancy a fetal mortality from abortion, premature labor or

This case illustrates two important principles in connection with the subject of exophthalmic goiter other cause of about twenty per cent may be expected, as I have shown in a preceding paper.

The reason for this divergence of opinion between the surgeon and the obstetrician may be explained by the fact that the pregnant woman, because of associated changes in other ductless glands, may react differently to the clinical syndrome which we call thyrotoxicosis. She may and apparently does have a much better capacity to adjust herself without operative interference. It would, therefore, seem to be indicated to treat these patients much more conservatively than the same woman who is not pregnant. Another reason for conservatism is that, following parturition the symptoms may spontaneously disappear and operation can be indefinitely postponed or only undertaken if the symptoms persist or are aggravated after labor. Indeed, it is conceivable that operation during the artificial hyperthyroidism of pregnancy, if one may be allowed such a term, may result in hypothyroidism following the reestablishment of the ductless gland balance after the pregnancy. I have no concrete example of this latter possibility but wish to report a few case records which will illustrate the general principle of this discussion.

Case 1. The patient entered the obstetric department of the University of Illinois, September 15, 1927. She was a colored primipara, thirty years of age, married and a factory worker. From her features and color one would say she was not of pure Ethiopian stock. Her last regular menstruation was April 13, 1927, but she flowed for three days, beginning May 10, 1927. The latter part of June she began to vomit, at first only once a day, later progressively more frequently. She had to stop work July 11 because of weakness. About August first she became extremely nervous and developed a marked tremor. For a month before entry she vomited day and night. Food stimulated vomiting and it was frequently preceded by hiccough.

Her family history and past medical and surgical history were essentially negative. Her menses began at eleven, were regular, thirty day type, and lasted five days with the passage of some clots.

Physical examination revealed a poorly nourished woman, whose present weight of one hundred seven pounds contrasted with her normal weight of one hundred forty-six. Her pulse was 140, respirations 32 and temperature 98.6°. Her systolic blood pressure was 108, diastolic 52.

The positive points in the physical examination were: Neck showed moderate enlargement of the thyroid which was firm and not nodular, and the pulsations of the vessels of the neck were marked. There was a moderate degree of exophthalmos. Her chest showed decreased expansion, respirations were shallow and rapid, breasts were small and firm. The lungs were negative for rales. Whispered and spoken voice was faint. The heart's action was rapid. The apex impulse was not strong, with a slight suggestion of a thrill. There was a systolic murmur which was transmitted to the axilla. The uterus was enlarged to about the size of a six month's pregnancy. Reflexes were slightly exaggerated. Vaginal examination revealed no abnormalities. The patient appeared to be extremely toxic and exhausted and was hardly able to stand. The basal rate two days after admission was plus 49.

She was seen in consultation by Dr. Seed of the Surgical Department who advised Lugol's solution ten drops three times a day, and was in favor of a thyroidectomy as soon as the crisis symptoms subsided. He feared that improvement, if it occurred, would only be temporary and that operation should be done before a relapse occurred. We pointed out the danger of abortion which he admitted, but felt it was slight in comparison to that of another thyroid crisis.

The vomiting stopped promptly on bed rest and Lugol's solution and the basal rate remained above normal though greatly reduced. She continued on Lugol's solution from September 19 until November 4 and after a rest of a few days it was commenced again and was again discontinued on the 19th of December for five days. It was then continued until her delivery.

A radiogram taken of her chest was negative for tuberculosis. A film made on September 16 showed a single fetus; a similar one taken January 3, 1928, showed two babies. Chart I shows the changes of the basal metabolic rate. The red blood count was 4,650,000, leucocytes 13,600. Her general condition was so good on conservative management that we decided to defer operation until some further evidence of thyroid toxemia manifested itself. We found that the basal rate stayed only slightly above normal, that the pregnancy apparently developed normally and that the patient's general condition and nutrition continually improved. She had very little reserve strength, however, as evidenced by her weakness in attempting to get out of bed on several occasions. The iodine solution was stopped twice for a period of a few days and this was followed each time by aggravation of the nervous symptoms, although the vomiting did not return.

We kept her under this management and in bed most of the time until February. A rather marked hydramnios developed about January 15, and an x-ray picture was taken because of the possibility of a monstrosity. This picture showed two normal twin babies, presenting by the breech. Toward term she was allowed to get up for two days, but seemed too weak to support much activity. A bag induction was done at term because she did not go into labor and was quite uncomfortable from the hydramnios. The duration of labor which was normal in every way was about eight hours. As soon as the first stage was completed both babies were delivered by breech extraction on February 4.

This case illustrates the onset of a thyrotoxicosis in a patient who previously had no symptoms of a thyroid hyperfunction. It demonstrates the fact that medical management will control certain of these cases; that it is not necessary to terminate the pregnancy, if the patient can be kept in bed, and also that Lugol's solution can be used over a period of several months without causing intoxication. This patient while in the hospital was in a rather crowded colored ward with general nursing care, conditions which are not altogether ideal.

One of the babies died shortly after birth, due to small cerebral hemorrhages. The other survived, noted distinct evidence of hyperthyroidism in pups and kittens from goiter-bearing mothers.

Case 2. A colored woman of twenty-one and a housewife came to the out-patient department February 20, 1929. She was a para-II, having had a spontaneous delivery of a living child a year ago after a thirteen hour labor, followed by puerperal sepsis lasting nine weeks. She had noticed goiter and heart trouble during this period.

Menses began at fourteen, were regular every twenty-eight days, scant, and lasted two or three days. Her surgical and family history contained nothing of importance. Her husband was a twenty-one year old healthy negro. At the age of twelve she developed a goiter and several doctors at this time and since have diagnosed goiter heart. Operation has been advised against because it was too dangerous. She has to remain in bed during menstrual periods and usually once or twice a year from one to three weeks because of cardiac palpation. There has been no edema except during the present pregnancy.

This pregnancy began July 14, 1928, and nausea and vomiting have continued throughout. She has experienced noctural dyspnea throughout the pregnancy with palpation, precordial pain, dizziness, epigastric pain and edema. For two months before entry to the clinic she had been unable to be on her feet for more than half an hour at a time.

The positive points in the physical examination were a slight cardiac enlargement, with a systolic murmur and an apical thrill and cervical pulsation. The pulse was 130. An enlargement of the thyroid the size of a goose egg and slightly nodular was noticed. The blood pressure was 134 systolic and 60 diastolic, and the blood count showed 90 per cent hemoglobin, 8400 white cells and 4,150,000 red cells. the blood Wassermann and Kahn tests were negative. The blood sugar was 65 mg. per 100 c.c. The urine showed a trace of acetone and a one plus of sugar and diacetic acid.

Pelvic measurements revealed a justominor fetus. The fetal heart tones were rapid, ranging from 150 to 180. The presentation was cephalic r.o.p. and the head floating. A fluoroscopic examination and radiogram showed no substernal thyroid. The basal metabolic rate was plus 59 per cent on the day after entry and 47 per cent the next day.

She was given ten drops of Lugol's solution in milk three times a day, and no other treatment except bed rest and full liquid diet. Rapid improvement occurred and within a week the pulse had come down to 96. There was no vomiting or nausea and the patient took and enjoyed a soft diet. The iodine was continued for three weeks but such decided improvement followed that it was decided to see if she could get along without it. This resulted in such marked aggravation of her symptoms that the Lugol's solution had to be started again in forty-eight hours and was continued until she left the hospital six weeks later.

Labor began April 5, about twelve days before she was due, according to the menstrual history. The first stage was four hours, the second and third stages five and thirty minutes respectively. The baby was born spontaneously, weighed 2580 grams, was forty-five centimeters long and showed no evidence of abnormality of the thyroid gland. It gained normally during its stay in the hospital. The mother went through a normal puerperium, was up on the ninth and went home on the twentieth day. The goiter was not reduced in size after delivery and the basal metabolic rate was plus 44 per cent three days before leaving the hospital. However, the clinical symptoms were very much improved. She was able to walk around the ward, stay up all day, wait on herself and take care of her baby without effort.

This, then, illustrates a latent exophthalmic goiter, whipped into activity by the metabolic strain of pregnancy, controlled by Lugol's solution over a period of weeks and almost immediate spontaneous cure following termination of pregnancy.

Case 3. The third case is a thirty-eight year old gravida-four, who was diagnosed exophthalmic goiter in the medical department in May, 1926, following a therapeutic abortion in January for heart trouble at the Wesley Hospital. She was about three months pregnant. Her basal rate was plus 32 per cent. Her first pregnancy occurred in 1920 and terminated with forceps. A second in 1922 terminated spontaneously, and her last menstrual period in the present pregnancy was June 23, 1928.

She was sent to the surgical department and diagnosed exophthalmic goiter by Dr. Seed and at that time had a basal rate of plus 49 per cent. Her pulse rate was 136 and radiogram of the chest revealed an old hilum tuberculosis. There was marked tremor, diarrhea, sweating and flushing of face and neck. Loss of weight of seven pounds and typical exophthalmic goiter finger nails.

She was transferred to the obstetric out-patient department, September 17, at which time the uterus was found to be about four lunar months pregnant. The blood pressure was 138/86 and hospitalization was advised. She entered the hospital September 18 and was put at bed rest with Lugol's solution, ten drops three times a day. Her basal rate September 24 fell to plus 30 per cent and four days later was plus 21. Her nervousness, tremor and sweating improved markedly and she was allowed to go home and continued on Lugol's solution and modified bed rest. She reported weekly at the obstetric out-patient department and steadily improved with gain in weight from one hundred fourteen to one hundred thirty-five and three-quarters on February 4, 1929. A basal rate on November 20, 1928 showed plus 43. The fetal heart tones varied from 140 to 156.

She was readmitted February 7, 1929 for observation. Her basal rate was plus 44. Her general condition was good. Tremor and sweating less marked. The urine reduced, Fehling's solution with three drops being used. The blood sugar was 102 mgm. per 100 c.c. The blood count was 4,220,000, red; 6,500 whites and 70 per cent hemoglobin. Wassermann and Kahn tests negative. Blood pressure was 124 systolic and 74 diastolic. Her pulse was 148 and there was a systolic murmur at the apex transmitted to the axilla. The fetel heart tones were 140. She was given Lugol's solution five drops three times a day and remained in the hospital for two weeks, during which time she was up and about the ward and her condition was good.

She reentered the hospital March 25, having mild labor pains and delivered spontaneously in twenty hours. The systolic blood pressure was 145 and diastolic 85. Her pulse varied from 128 on admittance to 90 during the latter part of the second stage. The first stage was nineteen hours long and the second stage one hour. The blood loss was only 175 c.c. The patient left the delivery room in good condition, pulse 114. The fetel heart tones during labor varied from 132 to 156 and were of good quality. The puerperium was uneventful except that the blood pressure stayed up to 140 systolic until the tenth day. The baby showed absolutely no evidence of thyrotoxicosis. It weighed 4160 grams and its length was 51.5 cm.

gained normally and had no evidence of goiter and has since developed into a normally healthy child. This is in contrast to the findings of Carlson who and pregnancy. When seen in 1926 no attempt was made to carry her along by bed rest and Lugol's solution, but a therapeutic abortion was immediately advised. Our criticism of this treatment would be that the medical management should have been tried first and failing, the goiter should have been treated surgically. In four out of five cases a living baby would have been secured in this way. In the recent pregnancy surgical intervention was advised by the surgeon and with perfectly good surgical indications. Consultation, however, convinced him that medical management might first be tried, and the outcome justified this advice.

CONCLUSIONS

1. The pregnant state may be complicated by mild hyperthyroidism, exophthalmic goiter and toxic adenoma, or by patients who have been operated upon previously for toxic goiter.

2. Those cases showing mild hyperthyroidism may be regarded as physiologic and no special treatment is advised except Lugol's solutions, five drops three times a day and careful supervision for further evidences of thyrotoxicosis.

3. Patients with hyperemesis gravidarium should be carefully examined for evidences of hyperthyroidism.

4. Exophthalmic goiter and toxic adenomata complicating pregnancy should be treated conservatively until the viability of the baby or at least until the medical treatment has demonstrated its own failure.

5. Toxic adenomata may have to be operated upon because of pressure symptoms or because of failure to respond favorably to Lugol's solution.

6. Those patients responding well to medical management may be allowed to go to term and deliver spontaneously or with slight assistance.

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SUBSTERNAL THYROMA

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There is no more interesting chapter in diseases of the thyroid gland than that which deals with normal or pathologic thyroid tissue in the thoracic cavity, especially its relation to the superior thoracic inlet and the superior mediastinum.

The classification of thyroid tissue which lies partially or completely in the thoracic cavity has not been carefully worked out. Nearly every scientific worker who has written of it in this anatomic region has observed the lack of scientific exactness in the terms which are in use to denote the various lesions. And there is, indeed, no other lesion of the thyroid gland so often encountered, in which the diagnosis is so commonly overlooked. Such terms as retrosternal, substernal and intrathoracic goiter, struma profunda and others have been used more or less interchangeably. One might venture to say that the profession has not fully appreciated the significance of these lesions.

We wish to present to the profession for their approval a classification which we hope will more clearly indicate the origin, extent and character of thyroid tissue in the thorax by the application of a new terminology. We have selected the term substernal thyroma to include all thyroid tissue normal or pathologic which occurs partially or completely in the thoracic cavity. Under this caption there are two general groups, thyroma of congenital and developmental origin and those which have acquired this position in extrauterine life, thyroma of acquired origin. It is necessary to determine in each individual case, whether the extension into the thoracic cavity is partial or complete, partial or complete thyroma, and from which lobe or isthmus of the thyroid the misplaced tissue arises or the lack of anatomic connection to the parent gland.

An outline of the classification would be as follows:

Substernal Thyroma

1. Congenital or developmental	A. Partial	a. Origin from right lobe
		b. Origin from left lobe
2. Acquired	B. Complete	c. Origin from isthmus

The operative note should always contain a statement of the relation of the misplaced thyroid tissue to the parent gland. A true accessory thyroid has no connection to the parent gland, while an allied accessory thyroid is connected to the parent gland by bands of fibrous tissue. If the connection be by thyroid tissue, it is called a pseudoaccessory thyroid. This anatomic arrangement is of more than academic interest, since a firm band of tissue may be used to assist in extracting a thyroma by traction with it.

This classification does not involve the usual classification of goiter (although it might be well to include all diseases of the thyroid under the term thyroma), but the latter is used to complete the former by indicating the type of goiter that is situated in the thoracic cavity. For example, if an adenoma arising from the right lobe be located one-half in the superior mediastinum, the balance extending into the neck, a right partial adenomatous thyroma would be the term employed to denote this lesion. This grouping of lesions in this anatomic location becomes exact, for the classification sharply indicates the origin, position and type of lesion.

While statistics which emanate from different workers vary slightly, over ten per cent of all goiters occur partially or completely behind the sternum, the majority by and large being only partial thyroma, for only a fraction of one per cent are complete thyromata.

Substernal thyromata are made up for the most part of adenomata, usually arising from the lower poles but to a lesser degree of cysts and tongues of colloid goiter and the still rarer types of congenital or developmental masses of thyroid tissue. The complete thyroma may arise from the thyroid gland in its usual anatomic position or be the result of congenital or developmental defects, aberrant thyroid tissue. Congenital and developmental thyroma may vary greatly in size and position and may be subject to the same pathologic changes as are common to the normal thyroid gland. Terry describes a congenital goiter, occurring in the Pathological Institute at Bern, Switzerland, present at birth, which occupied nearly the whole of the thoracic cavity, the lungs being compressed into thin sheets.

What is the mechanism of the production of substernal thyroma? The congenital or developmental thyromata are the result of congenital or developmental defects. Adenomata, cysts and linguiform processes of a colloid goiter, especially from the lower poles, are naturally directed downward toward the inlet of the superior mediastinum which route of expansion offers least resistance for migration of masses in this anatomic region in the absence of any anatomic barrier. The prethyroid muscles form a roof which directs any mass downward, since the resistance of these muscles is greater to masses of the lower thyroid borders than that toward the hiatus of the superior thoracic inlet. The normal up-down movements of the thyroid on swallowing bombards a potential canal, lower and lower, as the tissues give way to a tumor which is usually increasing in size. As the tissues spread before it the same force is applied in a new plane more and more caudad, until the tumor becomes fixed, ceases to grow, or produces alarming symptoms demanding immediate relief. Thyroptosis, the suction effect of the respiratory movements and gravity, may play minor roles in the production of substernal thyroma.

It is interesting to note in this connection the relative positions occcupied by a solid and a soft tumor in relation to the trachea. While a solid tumor may rarely lie directly over the trachea, compressing it from before backward, it usually lies to either side of it, deflecting, denting, flattening and collapsing this structure, reducing the caliber of the lumen and substituting an angulated, tortuous course for one which is normally in a straight line in a median position. But when the tumor is soft, as a cyst containing fluid, the tumor accommodates itself to the more rigid trachea and lies astride this structure.

On this account, if it is possible to palpate either tumor below the sternum with or without coughing, the center of the soft tumor will appear nearer the midline, while the solid one is apt to be at one side of the center of the suprasternal notch. The cyst is compressed or indented by the trachea unless the pressure in the cyst is rapidly increased by interference with the circulation or hemorrhage into the cyst, when it may be necessary for the trachea to accommodate itself to the increasing tenseness and size of the tumor and to this end it is compressed often suddenly with most alarming symptoms of almost complete respiratory obstruction, as in a case that I recently reported. This observation of the difference between solid and soft tumors has not been recorded in the literature to my knowledge.

Two cases from which I removed substernal thyromata illustrate very clearly this difference in position of solid and soft tumors in relation to the trachea. Both patients were between forty and fifty years of age. Both were short in stature and fairly stout, with short, thick necks. Both tumors involved the entire right lobe so that the mechanism of descent of each was identically the same. One tumor was a cyst containing fluid and the other a solid adenoma. The soft tumor, the thyroid cyst, lay completely in the mediastinum, the center of the mass being directly over the trachea and at the time I removed it there was an indentation by the trachea.

In the case of the solid adenoma it had insinuated itself along the right side of the trachea, displacing this structure to the left. This mass had been completely in the mediastinum but, following a paroxysmal coughing attack, it came to lie partly in the neck to the right of the median line. By changing its position in this way it constitutes what is known as a "spring goiter," "goiter mobile" or "wandering goiter." As is usually the case, the patient had been treated variously for intrathoracic lesions of another character than that which really produced the symptoms.

Symptoms often do not present themselves until patients are well along in years and the diagnosis is often not made until very clean-cut pressure symptoms are extant or until sudden alarming symptoms of almost complete respiratory obstruction supervene. When symptoms of substernal thyroma are associated with enlargement in the neck, there is, of course, less danger of error. The major symptoms are those dependent upon mechanical pressure in the superior mediastinum, where compressible structures course through a nonexpansible, bony cage. But adenomata in this location may become toxic, or less commonly malignant degeneration may occur, complicating an already untoward picture.

The organ chiefly involved is the trachea which is usually indented, compressed, deflected or collapsed by the downward progress of a tumor which is gradually and occasionally rapidly increasing in size. These changes in the contour and caliber of the trachea provoke a noise on respiration, and if the collapse be sudden, most alarming symptoms, intermittent in character, of sudden respiratory obstruction occur with labored breathing, stridor, dyspnea and cyanosis. There may be sensations of choking as a result of a collection of secretions in or pressure on the trachea. Attacks of coughing which are often paroxysmal are frequent and a tumor already in the thorax may be displaced into the neck as a result of sudden pressure on the distal surface of the mass.

Patients frequently seek a definite attitude when lying down and notice difficulty in breathing when any other position is assumed. It may be necessary to hold the head on one side, and if it be turned to the opposite shoulder, difficulty in breathing occurs. This fact is explained by Lahey in the following manner. Substernal thyromata are more or less spherical and the trachea which is misplaced by it curves partially around the mass. If the head be bent sharply toward the shoulder on the same side as the mass, the trachea will be more firmly pressed against it.

This results in further collapse of the trachea, if the mass is large, just as one might cause collapse of a firm rubber tube by traction on both ends of it, while it is held over a firm spherical object. Dyspnea is usually present on exertion. In a case which I recently reported the dyspnea was intermittently paroxysmal. Dysphagia due to direct or indirect pressure through trachea on the esophagus is occasionally noted. Hoarseness which results from pressure on the recurrent laryngeal nerves may be complained of and should always be carefully inquired into before any treatment is instituted. A fairly constant symptom is a sense of pressure beneath the sternum.

On physical examination one may detect either the presence or absence of enlargement of the neck. When a tumor is present in the neck, the diagnosis is more frequently made correctly. With symptoms of mediastinal pressure and an enlargement in the neck the diagnosis is still more easily made, but in the absence of neck tumor and with only mild pressure symptoms, substernal thyroma may not be considered except by one interested in these lesions. The thyroid cartilage may be somewhat misplaced to either side of the median line and the larynx may be low or fixed and the excursion on swallowing limited.

The veins of the neck may be dilated but of particular interest is the frequent occurrence of dilatation of the small veins on the upper chest, collateral circulation, as a result of obstruction of neck veins, when it may be necessary for the blood to return to the general circulation by a new route from part or whole of head and neck. Depending upon the extent of the collateral circulation induced, the dilated venules will vary in size and number, extending under certain circumstances to the abdominal wall.

Palpation of the lower poles of the thyroid gland will be impossible when an extension has occurred into the thorax, and the palpating finger may detect the trachea in an abnormal anatomic position. A helpful maneuver in detecting substernal thyroma is to have the patient extend the chin and cough very forcibly. In this way the examining finger may note any abnormal impulse coming from under the sternum, the solid tumors usually producing an impulse at either side of the center of the suprasternal notch and the soft ones at the median line. Percussion may or may not show dullness under the sternum, when a substernal thyroma is present.

Pressure on the recurrent laryngeal nerves may produce unilateral or bilateral paresis or paralysis of the vocal cords so that in all cases a laryngoscopic examination should precede any operative interference, for in this way paralysis of vocal cords due to substernal thyroma may be differentiated from operative injury or from the effects of pressure of a hematoma or an inflammatory exudate. Disturbance of innervation or passive congestion from pressure on the vessels in the mediastinum may be predisposing causes to the cardiac disturbances, the goiter heart of Rose, which may occur as a result of these lesions. There may be a difference in the pulses of the two sides, due to pressure on a subclavian artery.

In a case which I treated about three years ago there was dilatation of the pupil on one side with unilateral flushing of the face. This was a large neck adenoma with moderate extension under the sternum. The change in the pupil persists but the flushing has subsided. Careful study of the eyes by an ophthalmologist did not reveal any other lesion. Paralysis of cervical sympathetic chain on one side would account for flushing of face but would also produce constriction of the pupil and not dilatation. Lumbar puncture was negative. Endotracheal examination, if performed, may show abnormality in the contour and caliber of the trachea.

The laboratory examinations are of considerable importance in the diagnosis of these lesions. Since tracheal deflection and flattening is fairly constant, this may be accurately portrayed by roentgen films. If the trachea is deformed anteroposteriorly, little information will be obtained unless satisfactory lateral films of this organ are obtained and this procedure which has not been generally carried out I wish to recommend at this time. The extraneous shadow of the mass may usually be seen on the films or on fluoroscopy. Under the fluoroscope the tumor may be seen to move on swallowing or with the respiratory movements. Naturally the basal metabolism will be elevated only in the toxic cases.

The treatment of substernal thyroma is surgical and this form of treatment should be promptly recommended as soon as the diagnosis is made. This is especially true, since they usually occur in later life and increase in size, making the dissection more difficult and the danger of the procedure greater with the lapse of time. The tumor may so increase in size that the intrathoracic portion becomes larger than the opening in the superior mediastinum, through which it must pass, necessitating an increase in the size of the superior mediastinal strait in order to extract the tumor by splitting and wedging apart the sternum or by removing the manubrium. To delay may mean that a nontoxic adenoma may become toxic with a concomitant rise in the mortality rate and increased danger from hemorrhage. Of greater importance but of less frequent occurrence is the advent of malignancy. Long continued pressure may cause the absorption of tracheal rings with danger of collapse of that structure upon removal of the tumor.

Of the two varieties, the plunging and the fixed, the former is more easily removed. When the mass is adherent to the pleura or the lung compressed, the pleural cavity may be entered while separating the two structures. In removing these lesions great care must be exercised to prevent injury to the trachea, pleura, thoracic duct and recurrent laryngeal nerves. Less difficulty may be experienced in the prevention of trauma to the esophagus and great vessels. One should remove, therefore, all tumors that have or tend to become substernal thyromata at an early date. Those that tend toward but have not assumed this anatomic location may be kept under observation every few months until it is determined whether their course is or is not into the thoracic cavity. The danger of mediastinitis and postoperative pulmonary complications increases with the increases in size and downward progress of substernal thyroma.

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Diets for the Identification of Food Allergies. Jane Dale and Harvey D. Thornburg, Los Angeles (*Journal A. M. A.*, Aug. 17, 1929), offer two diet lists which may be used as the basis of adequate diets for the identification of food allergies. Five menus have been prepared from each diet list which provide adequate amounts of protein, minerals and vitamins for the adult and which may be modified readily to meet his energy requirements. Two menus have been prepared which show the adequacy of these diets for children.

MENSTRUATING TRACT FROM UTERUS TO ANTERIOR ABDOMINAL WALL *

REPORT OF A CASE

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Reports of fifty-two cases of endometrioma of the postoperative abdominal scar have been reviewed.** Apparently the largest number available in previous reviews has been forty-six. Attention is called to the meager notice which has been paid in the past to the possibility of the development of these growths by direct invasion of endometrium into the abdominal wall. It has not been denied that this may occur, but for the most part it has been considered only the remote possibility, and in many instances the most obvious distortions of logic have been indulged in to avoid falling upon this quite adequate and apparent explanation. The fact, as Nicholson[1] says, that "anatomic continuity between the epithelium of uterine mucous membrane and that of the tumor has not been established in one single case," has been thought sufficient by the majority to exclude such a possibility.

The case to be reported in this paper furnishes a rather perfect example of such continuity. Other instances will be noted, in which the inference of a similar etiology is virtually unassailable. In the face of such direct evidence, and in view of other factors noted from a study of the available cases in the literature, the issue will be cleared for the recognition of this mechanism as the basis of the formation of these growths in a large number of the reported cases. Thus a more intelligent approach can be made to the prophylaxis of the condition.

CASE REPORT

The patient is 24 years of age and married. She has had one miscarriage and one normal delivery. Six years ago, following a gonorrheal infection, she was operated upon at Multnomah County Hospital. The operation lasted three hours. The operative report states that there was performed "bilateral salpingectomy, left oophorectomy, resection of fundus of uterus to just below where tubes come off, removal of cone shaped piece from endomertium." Three drains were inserted to the cul de sac.

The patient was discharged twenty-four days after operation with serous drainage from the incision. Menstruation occurred at the usual intervals and showed no notable abnormality until the sixth month following operation, at which time the serous discharge from the incision had stopped. There now commenced a dull generalized lower abdominal pain, associated with tenderness in the lower part of the operative scar, and increasing with each menstrual period. Some months later there appeared gradually a very tender nodular thickening in this region which eventually exuded small quantities of darkish blood-stained fluid with each menstrual period.

This gradually increased in amount, and at present the patient states this bleeding requires that her sanitary napkin be placed forward in order to absorb the flow from this region as well as from the vagina. The flow is frequently quite profuse but always dark in color. The tenderness and pain at the menses is described as excruciating.

Abdominal examination (second day of menstrual period) reveals a wide, rather distorted midline scar from symphysis to umbilicus. The condition of the scar is suggestive of previous incisional infection. At the lower pole, immediately above the symphysis, there is a wrinkled depressed area, reddened and puckered, and about the size of a five cent piece (fig. 1). Its depressions are filled with what appears to be old dried blood. A sanitary napkin, the upper end of which overlies this area, is quite profusely blood-stained. Removal of the blood from this depressed surface, which is exquisitely tender and deeply indurated, reveals three small darkish blue blebs in various stages of distention. The largest was ruptured by a probe in the course of the examination and its thick chocolate colored contents extruded. A probe can not be inserted without the use of undue force.

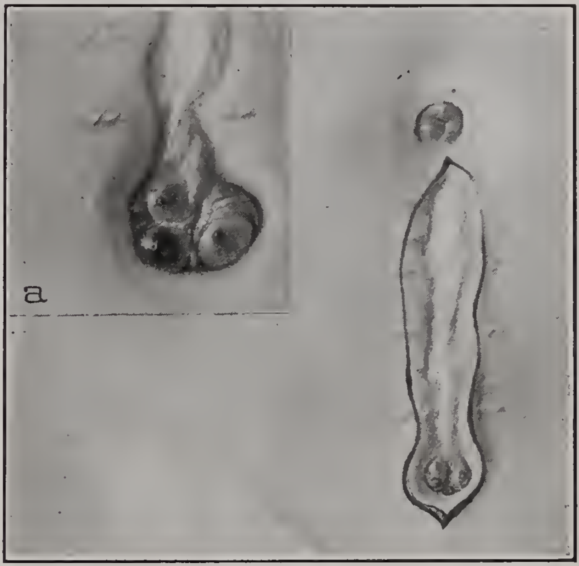

Fig. 1. Drawing of author's case at time of operation. The old scar with endometrial new growth at lower pole is shown with the incision made at recent operation. Detail of new growth is shown in inset. Bleeding occurred by rupture of the blebs at the menses.

Vaginal examination reveals a small fluctuant tumor in the region of the right ovary, thought to be an ovarian cyst, and a fundus of normal size in fair anterior position and quite fixed, giving the impression of definite adhesion to the anterior abdominal wall.

Preoperative diagnosis: Endometrioma of abdominal wall, fundus adherent to anterior abdominal wall. Right cystic ovary (possibly chocolate cyst).

Operative report: At operation (eleventh postmenstrual day) the scar was excised, and the pelvic viscera were exposed. A firm cord-like adhesion was noted, extending from the peritoneal aspect of that part of the abdominal

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* Read before the Fifty-fifth Annual Meeting of Oregon State Medical Society, La Grande, Ore., May 16-18, 1929.

* From the Department of Gynecology, University of Oregon Medical School.

** Reference to several more cases has been noted. They are not included in Table I and bibliography, due to failure to obtain original references.

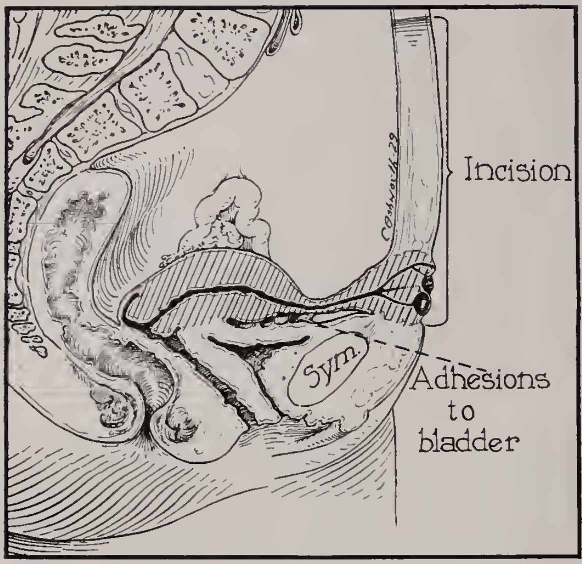

Fig. 2. Schema of author's case. The endometrial tract was traced by sections and reconstructed as shown. It was visible to the naked eye on gross section.

wall involved in the growth to the top of the corpus uteri at its midpoint (fig. 2). These relations were kept intact, and a cone shaped excision of uterine wall was made at the insertion of this cord-like structure into the fundus so as to remove complete a possible sinus tract to the endomertium. The uterus was sutured and the usual closure made. Convalescence was uneventful. Subsequent examination (after five months) revealed no evidence of recurrence.

Gross examination:[†] The operative specimen, exclusive of the excised scar, consists of an oval shaped piece of skin, to which is attached a mass of fat which in turn surrounds a firm tapering cord-like structure about 4 cm. in length. In the skin are two small openings, one a slit-like aperature 1 by 3 mm. in diameter and the other about 2 mm. (These correspond to the bases of the two larger blebs described and pictured at examination during the menses.)

The skin for a distance of several mm. about each opening was bluish black in color. The lower end of the specimen showed the cut surfaces of the cone-shaped portion excised from the uterus. The peritoneum covering the corpus uteri appeared to fuse imperceptibly (on the surface of the cord-like connecting structure) with that of the adjacent abdominal wall.

At the uterine end of the specimen and in the center of the clearly demarcated muscular cord there is a small opening approximately 2 mm. in diameter and apparently lined by mucous membrane. This is surrounded by a well defined wall about 3 mm. in thickness, the diameter of the entire structure being about 8 to 9 mm. Cross section at a number of points shows that this opening or lumen extends almost to the skin. Just beneath the skin it appears to divide into three smaller channels. These are grossly easily recognizable because filled with a blackish thick fluid (figs. 3–6).

Microscopic examination: Sections from various parts of the above described cord-like structure show that its lumen is surrounded by a wall composed of smooth muscle bundles with a small amount of connective tissue, carrying vessels, etc. The epithelial lining of the lumen consists of a single layer of tall columnar epithelial cells. There is a clearly defined characteristic stroma, in which appear many simple glandular structures lined by a tall columnar to cuboidal epithelium. Cilia were not noted.

It is my observation, and that of Dr. Warren Hunter, that the muscular wall bears a great similarity to the myometrium, while the lining unquestionably bears the exact structure of the endometrium. Not only are the composite histologic structures identical, but the general arrangement throughout is that of a small but perfectly ordered endometrial cavity. It is interesting to note also that the condition of this miniature endometrium corresponds roughly to the late stage of regeneration which agrees with the patient's actual menstrual phase.

Sections of blocks, cut so as to include the skin and the attached cord beneath it, reveal an intimate connection between the smooth muscle which makes up the body of the cord and the corium of the skin. The two tissues blend intimately, yet are clearly differentiated from each other. Scattered here and there in the smooth muscle are glands identical in structure with those seen elsewhere except that here, near the skin, they are frequently much dilated and cystic with atrophy of the lining epithelial cells and are not flanked by so characteristic a stroma. Some contain blood, others mucus and cellular detritus. About them there is a scanty stroma which generally is suffused with blood. The sections do not show any of the glands actually communicating with the skin surface, although from the gross appearance of the specimen it seems certain that at least some of them must have opened externally, probably through cysts (fig. 7).

Pathologic diagnosis: Adhesions of fundus of uterus to anterior abdominal wall, producing elongation of a portion of uterus which contains endometrium and with formation of mutiple fistulae opening on surface of skin.

COMMENT ON ETIOLOGY

The rational explanation of the condition noted here is quite obvious. The presence of drains, together with the tendency to walling off of the drained tract and the occurrence of infection, involving the incision on the top of the corpus as well as the deeper layers of the abdominal incision, are all factors tending to cause fibrinous adhesion of the adjacent wounded and infected surfaces. With the subsequent establishment of fibrous adhesions, and the breaking down of the stitches in the uterine wall due to infection, it is quite simple to picture the formation of a sinus tract which eventually became carpeted with outgrowing endometrial mucosa.

We are familiar with that characteristic of this tissue which allows it to regenerate very rapidly to cover the denuded postmenstrual mucosa. Cullen,[2] in describing the invasion of mucosa into myomatous tissue, describes it as "flowing into the chinks." "If these are small, there is only room for

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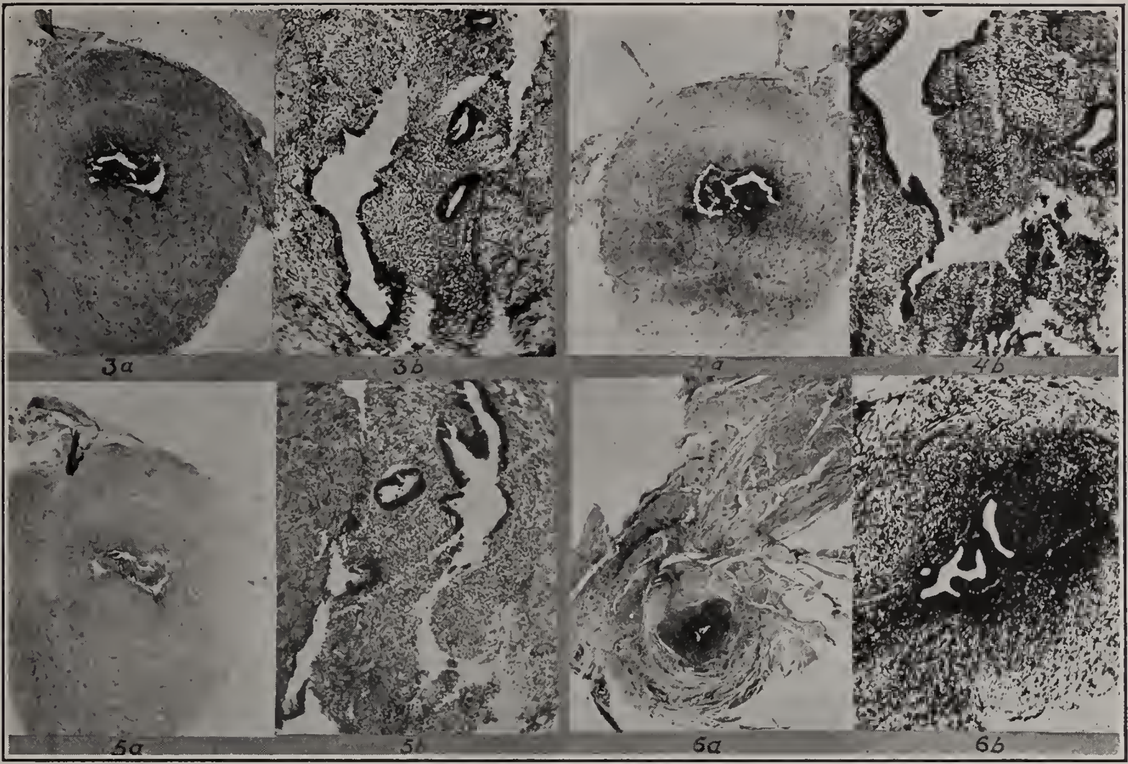
[†] This description combines the salient features of both the operative and pathologist's reports.



Figs. 3, 4, 5 and 6 are from sections taken at points along the tract from the top of the uterus to the fascia of the aponeurosis overlying the rectus muscle. In each case the low power view shows the entire muscular cord with its endometrial core, while the high power view gives the detail of the core at the same point. The cord is composed of smooth muscle. The tabs shown in sections 3, 4 and 5 represent fibrous adhesions to the bladder wall. Fascia and fibres of the rectus (striated) muscle are present in fig. 6.

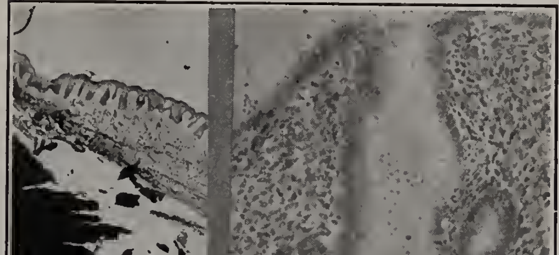


Fig. 7. Low power view of a section cut vertical to the skin through the center of one of the blebs depicted in fig. 1. The dermis is shown above, the cysts walls being lined by a single layer of cuboidal epithelium, flanked by typical endometrial stroma, as shown by high power taken as indicated. The cyst contains old blood and detritis, and is undistended. The section was taken during the intermenstrual phase.

isolated glands, but where the spaces are of goodly size, large masses of mucosa may flow into and fill them." It is not difficult, then, to suppose that it may grow similary along a healing denuded sinus tract. It is quite difficult, in fact, to imagine any other explanation for the formation of so definite a tract as this.

Gouilloud, Martin and Michon[3] report the case of a woman thirty years of age who underwent a myomectomy for the removal of a large fibroid. The endometrial cavity was not opened, careful closure was effected, but drainage was instituted. The convalescence was stormy, lasting three months and there persisted a small fistula through the incision which exuded minute quantities of blood at the menses for another three months. This eventually closed, but after still another three months began again to discharge very small amounts of menstrual blood. A small tumor developed about the dimple-like opening of this tract which tumor was subsequently shown to be a typical endometrioma. Menstrual swelling and discharge continued for three years. The growth was excised about three years after the initial operation. The uterine scar was adherent beneath the abdominal wall growth, but at this time a continuous mucosal tract to the endometrial cavity was not demonstrated.

In this instance it seems reasonable to suppose that there did exist for some time a patent sinus, since the drainage of blood occurred at the menses for the first three postoperative months. During this time an incisional transplant could hardly have reached sufficient development to reproduce the menstrual function as eventually occurred. It seems reasonable to accept, as do the authors, the highly probable hypothesis that there existed for three months an initial actual fistula which allowed the escape of menstrual blood from the fundus. Subsequent atrophy and occlusion of the connecting portion caused occlusion and obliteration of the sinus. Later the menstrual function was assumed by the growing endometrial elements in the better protected layers of the abdominal wall. Such a sequence seems reasonable, especially when we have evidence of the atrophy of a similar connecting tract in several cases, notably that of Fraas,[4] in which tubules and cysts were demonstrated in the adhesions connecting the fundus to the abdominal wall growth.

As an alternative explanation, certain authors (Nicholson,[1] Novak,[5, 6] et al.) have maintained that this phenomenon is due to a metaplasia of the peritoneal epithelium in the region of the scar, in response to an hypothetical and ill defined local irritation or hormonal imbalance, resulting in the production of glandular epithelium and the subsequent metamorphosis of the fibrous tissue of the region into stroma and smooth muscle. We cannot enter into an argument regarding the merits of the various theories for the genesis of ectopic endometrial tissue at this time. It seems fair, however, to point out that none of the variants of this theory can apply as a rational explanation of the case which I have reported, and that their application to the case of Goullioud et al. which I will mention seems in a high degree improbable.

In only six of the fifty-one cases which I have reviewed is the peritoneum described as actually involved in the growth at all (table 1). If metaplasia of the peritoneum were the constant initial factor, it should be the invariable seat of the initial growth. Is it not a distortion of logic to imagine a retrograde growth back through an adherent scar tissue stalk and through the uterine wall, with the creation by this ectopic and metaplastic mucosa of an actual sinus tract, lined by mucosa and flanked by smooth muscle? One may as well argue that a fecal fistula ordinarily originates from a stitch infection in the skin rather than from injury to or infection of the bowel wall itself. I am not in a position to press the argument against the theory of peritoneal metaplasia in its general application, but if we must fall back on explanations other than direct invasion for these growths the theory of transplants (Sampson) seems to have a more rational application.

Published by	Ventrofixation	Cesarean section at term	Operation on pregnant uterus	Hysterectomy	Hysterotomy	Operation on adnexae	Operation on uterine ligaments	Appendectomy	Myomectomy	Ectopic pregnancy	Total
Amos			1								1
Amann						1					1
Bonney		1							1		2
Berkeley		1									1
Briand		1									1
Cullen		1									1
Danforth (Shallenberger)	1										1
Dietrich	1										1
Fraas	1										1
Douglas	1		1				1				3
Goullioud et al.									1		1
Heaney		1	1								2
Halban	1										1
Klage	1										1
Lauche	3					1					4
Lochrane	1										1
Lemon and Mahle	5			1		2	1				9
Letulle et al.								1			1
Maes				1							1
Mahle and McCarty	1							1			2
Nicholson						1					1
Pujol et Chohez						1					1
Polano										1	1
Rosenstein	1										1
Roeder	1										1
Schwartz		1									1
Stratz	1										1
Tobler						2		1		1	4
Vassmer	1										1
Von Franke			1								1
Williams		1									1
Author's					1						1
TOTAL	19	7	5	2	1	8	2	3	2	2	51

TABLE 1.

THE ROLE OF VENTROSUSPENSION

It is obvious, then, that where there is adhesion between fundus and abdominal incision, invasion of the region of the scar by endometrial mucosa may occur. It is important to consider the conditions which may prepare the way for this.

Roeder's[7] case is of great interest in this regard. His patient, aged 25 and married, had undergone a ventrosuspension four years previously. There gradually developed a typical, rather large "menstrual tumor," very painful at the menses, but not exuding blood at any time (fig. 8).

At operation (by Dr. Roeder) the mass was removed from the abdominal wall and a resection of the upper half of the body of the uterus was done. The fundus was found firmly attached to the abdominal wall by adhesions and dissection revealed the original silk sutures intact, extending to and through the wall of the fundus (fig. 8). The tract surrounding the suture was lined by the same appearing tissue found lining the uterine cavity and also in the tumor of the abdominal wall. Microscopic examination of the tissue in the region of the suture showed adenomatous tissue.

Dr. Roeder's opinion, apparently backed by that of Dr. Sampson, is to the effect "that in this instance, the uterine mucosa grew along the path of the silk suture and formed a distinct sinus, lined by endometrial tissue, enlarging into a mass on the external surface of the aponeurosis and

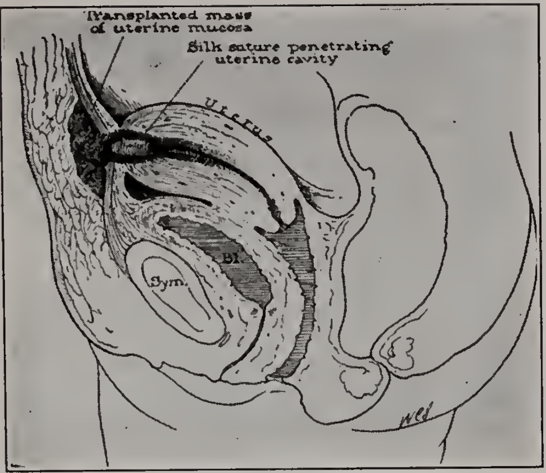

Transplanted mass of uterine mucosa
Silk suture penetrating uterine cavity
Uterus
Bl.
Sym.
WEL

Fig. 8. Cut from Roeder's report. The mechanism of the formation of a fistula by migration of endometrial mucosa along the tract of a silk suture is obvious.

also infiltrating the scar." The silk suture in this instance was traced into the cavity of the uterus.

At this point, it is pertinent to note that out of the fifty-one cases abstracted from the literature, by far the largest number, following any single type of surgical procedure, have followed ventrosuspension of the corpus uteri. Nineteen, or 36.3 per cent of the total number of cases, appear as a result of this operation which is obviously (especially in the past ten years) a relatively infrequent procedure. In other words, the condition is seen most frequently following an operation which is relatively very seldom performed.

Obviously, then, there is something in the nature of such a procedure predisposing to endometriomatous formation. I believe that the explanation rests in the use of nonabsorbable sutures from corpus to abdominal wall. There is almost constantly a varying degree of tension upon these sutures with resultant necrosis, and not infrequently there is infection with the occurrence of an actual necrotic tract as the pathway for subsequent invasion by the uterine mucosa. I hardly think it is necessary to argue regarding the possibility of dragging viable endometrial fragments through into the incision on a moving suture, or carrying out such fragments on the point of a needle. It seems that these are remote possibilities, especially since the sutures are seldom carried entirely through the uterine wall. The really logical explanation of this occurrence following ventrosuspension appears to reside in the use of nonabsorbable sutures with almost constant tension and not infrequent infection.

OTHER ETIOLOGIC FACTORS

Another notable factor in the occurrence of these growths following other operations is the frequency with which drains have been used or postoperative infection has occurred or both. I believe these are important factors in the early phase of the genesis of the condition. A stormy postoperative course is almost the rule. It is easier to explain such an occurrence following appendectomy, for instance, when we know that drains and definite infection were factors in all three of the reported cases. Following operations on the adnexae, it is not difficult to picture an actual invasion through the agency of adhesions, especially where a cornual excision of a tube has been done. For example, in one of the reported cases the uterine cornu, from which the tube had been excised, was found adherent to the peritoneal aspect of the scar, subjacent to the endometrioma. Out of eight cases (15.4 per cent), following operations upon the adnexae, the fundus was adherent to the scar in three, not described in three and not adherent in two.

Where there is no adhesion or evidence of past adhesion via which invasion may have occurred, some other hypothesis must obviously be adduced. For example, two cases are noted following simple tubal sterilization, and others following operations involving only the uterine ligaments. Barring the possibility of infection (which is not always clearly eliminated), it would require a considerable distortion of the direct invasion theory to fit such conditions. It would perhaps be less out of the drawing to fall back on Sampson's theory and suppose that endometrial fragments from the invaded fundus or from tubal regurgitation (due to manipulation) may have become viable in the edges of the incision.

Space does not permit a careful analysis of the interesting aspects presented by even so brief a tabulation of the published cases as that in the chart. I will, however, call your attention to a few outstanding factors. Ventrosuspension, which is a relatively very infrequent operation, carries the largest incidence of postoperative endometrial transplant in the abdominal scar. This finding clearly substantiates my contention that direct invasion is indeniably a frequent etiologic factor.

Operations upon the adnexae come next in line (eight cases, 15.4 per cent) but it should be noted that under this head come most of the pelvic infections with subsequent drainage and frequent excision of parts of the corpus uteri resulting in adhesion to the anterior abdominal wall. In only two instances was a simple uncomplicated surgical procedure upon the adnexae alone followed by such a condition. Cesarean section is next in frequency (seven cases, 13.3 per cent‡). The nature of this operation and the great frequency with which it is performed would cause us to expect that it should be the forerunner of endometrial transplants in a very much larger number of cases. The infrequency of this sequence seems an argument against the general application of the direct implantation theory (Sampson). It is suggested that there is an attenuation of the regenerative potentiality of the decidua at term which is responsible for the low incidence noted.

TREATMENT

The treatment of this condition in all of the reported cases has been surgical excision. No recurrences have been noted, and the surgical treatment may be considered satisfactory. General considerations in regard to prophylaxis would indicate the desirability of carefully covering the exposed wound edges in all laparotomies, but especially where the endometrial cavity is being invaded. The operation of ventrosuspension of the corpus uteri should be undertaken with even more than the usual circumspection. Some modification of the older type of operation, which would include complete enucleation of the endometrial mucosa, might entail less likelihood of later endometrial formation. Undue tension on sutures should be avoided. The use of drains should be limited to imperative indications. They are not indicated in operations involving ordinary infections of the adnexae.

SUMMARY

It has been argued that endometrioma of the laparotomy scar does not occur as the result of direct invasion of the abdominal wall by uterine mucosa. The chief argument against this occurrence has been that direct continuity between the epithelium of the uterine cavity and that of the new growth has never been established.

A case is reported (author's) in which such continuity is definitely established and other cases, apparently not generally noted are referred to (Loicq,[8] Puccioni,[9] Ballin,[10] fig. 9). Another case is quoted (Roeder's), in which the evidence is clearly to the effect that migration occurred along silk sutures from the endometrium to the abdominal wall. In a third case (Goullioud's) there was apparently at first a definite sinus from the uterus to the skin, with later closure of the deeper part of the tract and still later assumption of the menstrual function by the more superficial elements, remaining viable in the abdominal wall. A fourth case (Fraas') completes the sequence indicated by the others by the finding of endometrial tubules and cysts in the adhesions connecting the fundus to the endometrioma of the abdominal wall.

I believe from the above findings that direct invasion of the abdominal scar by endometrial elements via nonabsorbable suture tracts or sinuses, dependent upon pressure or infection necrosis or drains, is the correct explanation of the occurrence of many of these growths. It cannot, however, explain all of the reported cases.

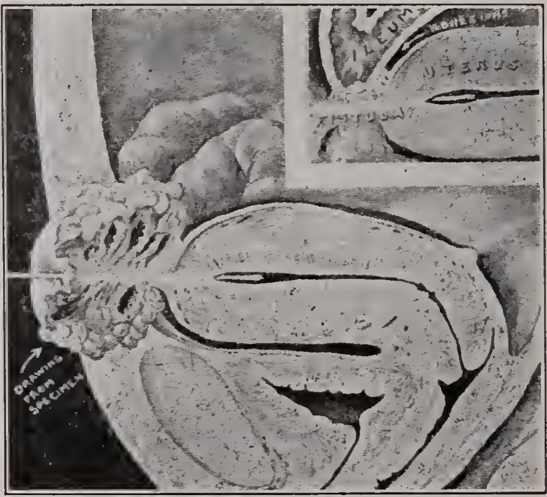


Fig. 9. Cut from Case 3 of Ballin's report. Note passage of bristle into fundus. Postoperative menstrual fistula. Direct communication of the fistula through the endometrial enclosure into the uterine cavity. Also note the intestinal adhesions to the enclosure.

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‡ Several cases following cesarean section have been found since the reading of this paper. They are not included in Table I.

USE OF FOREIGN PROTEINS IN THE TREATMENT OF GENERAL AND OCULAR INFLAMMATIONS*

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The fact that certain protein substances exert a curative influence when introduced into the system has been noticed by different observers since the beginning of medical history, but it is only within recent years that this knowledge has been systematized and the various reactions and results studied with a view to determine their therapeutic action, the substance best suited for practical results and the method of administration. Opinions differ as to who first began the systematic study of the action of foreign proteins in the treatment of disease but there was very little general interest in this form of therapy until the last fifteen or twenty years. During this period considerable has been written on this subject by research workers, general practitioners and men in special practice.

Miller[1] in a well written paper reviews the literature and gives his own experience in the use of foreign protein in general conditions. He mentions different types of foreign proteins and states that the results in all those mentioned that excite a reaction have been satisfactory, especially typhoid vaccine. The dosage of typhoid vaccine varies according to different observers from 25 to 250 million. He used 25 to 35 million as an initial dose and increased 10 to 15 million at subsequent injections. He feels that a good reaction is desirable and thinks that a violent reaction will occasionally effect a cure, when moderately severe reactions will give only temporary improvement and that the occasional value of an acidosis should be borne in mind. He says that the above doses apply only to afebrile or slightly febrile patients, such as those with chronic arthritis. If we are treating an acute infection with high temperature, as pneumonia, typhoid or erysipelas, the initial dose should be smaller, not to exceed 15 to 20 million. Even these small doses may cause a rise of temperature of two or three degrees Farenheit.

His initial dose of milk is from two to five c.c., increasing with subsequent injections. He feels that if no benefit is derived after two or three injections it is not probable that further treatment will be beneficial. He has found that in children or obese patients, where intravenous medication is difficult, milk may be used and that the results are comparable with those obtained with intravenous protein therapy. The fear of sensitizing to milk as a result of treatment is not a valid objection.

He advises against either the use of milk or typhoid vaccine in chronic alcoholics, diabetics or elderly people with evidence of impaired myocardia. Speaking of clinical results, he states that nonspecific therapy has been used more extensively in arthritis than in any other disease and may be quite spectacular in its results. A helpless patient may within two or three hours following the reaction be quite comfortable. About seventy per cent of patients with acute arthritis are practically free from discomfort or at least greatly relieved after two or three injections of typhoid vaccine. The results in chronic arthritis are not so satisfactory, although he quotes Yoeman[2] who reported improvement in eighty to ninety per cent of a group of fifty patients and thinks that perhaps the results were achieved by very careful selection of patients.

He reports more or less favorably on nonspecific therapy in typhoid fever, sepsis, erysipelas, septic ulcer, bacillary dysentery, et cetera. It is particularly helpful in gonorrhea and its complications and also gives gratifying results in encephalitis and postencephalitic conditions. He reviews the treatment of general paresis at some length, giving the experience of many observers.

Knude and Gerty[3] have been able to obtain good reactions in paretics by injecting increasing doses of typhoid vaccine, beginning with fifty million and increasing to one and one-half billion. He states that, if results should prove as satisfactory as with malaria, it would greatly facilitate the more general use of protein therapy in this disease. Improvement is reported by a number of observers in the treatment of multiple sclerosis. The more recent the onset the better are the results from treatment.

Mueller[4] states that, if a nonspecific protein agent, whatever it may be, is injected into the body, a reaction occurs which involves almost every organ. He carried on extensive tests on animals and human subjects and found that the splanchnic organs are stimulated, while a corresponding inhibition takes place in the periphery. This response is particularly valuable in infectious diseases, where an increase of the detoxicating action of the liver, etc. is required. The giving of protein agents merely stimulates the same activities which are naturally stimulated after bacteria have invaded the body, as in pneumonia and other infections.

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*From the Department of Ophthalmology, College of Medicine, University of Nebraska.

Averett[5] has obtained equally good results without febrile reaction by using sterile milk in the form of aolin, lactigen or milk of low bacterial count, such as certified milk, as when he obtained a shock reaction with a high temperature. His method of treatment consists of an intramuscular injection every other day of 10 c.c. of certified milk skimmed and boiled for five minutes in a water bath or of the same quantity of aolin. He is convinced that nonspecific proteins have a definite and valuable place as therapeutic agents in the treatment of gynecologic infections. Vigorous use will in some cases replace surgical intervention, thereby avoiding the removal of the sex organs and preserve the normal menstrual and reproductive functions. A febrile reaction with its train of disagreeable symptoms is not considered essential in the successful use of nonspecific protein therapy, as was heretofore thought necessary. The use of this therapeutic agent yields the best results in acute and subacute pelvic infections. The immediate effect of the injection of nonspecific protein is the disappearance of pain and the development of a sense of well being.

Miller appends a bibliography of 115 references and, while there is considerable variation as to the agent of choice, dosage and method of administration, I did not notice any instance where any one had failed to get favorable results in suitable cases. Some emphasized the fact that this form of treatment is not a "cure all" and in some cases was used as an aid to the main line of treatment. The general impression was that it reduces discomfort in nearly all cases and hastens recovery in many.

Although much valuable work has been done in this form of therapy by observers in the field of general medicine, its practical application is most noticeable in ophthalmology, possibly because the acute inflammations of the eye react more promptly to this form of treatment and, in addition due to the anatomic position of this organ, we are able to observe the progress of the disease from day to day. Woods[6] states the question clearly when he says, "the problems connected with the use of nonspecific protein therapy in opthalmology are in no way different than the problems connected with diffuse inflammations occurring in other portions of the body. Therefore, nonspecific protein therapy had better be considered as a general problem and not as isolated ocular therapeusis." He states that the first observation on the effect of nonspecific protein therapy was that of the Indian Plague Commission many years ago, who observed that antiplague inoculations had a beneficial effect on miscellaneous infections and drew attention to the therapeutic role which nonspecific protein therapy might play.

Scarlet,[7] in answering the objection that results in animal experimentation cannot be followed when treating human conditions, quotes Darrier as saying, "Why should a method which has been so successful clinically be swept aside merely because it has failed in animal experimentation?" It is interesting to note the positive preference that certain individuals of wide experience have for some particular protein or preparation. For example, Key[8] favors the use of antidiphtheritic serum, feeling that it offers the best form of foreign protein for administration to the human. The facility of obtaining and administering suitable doses of antidiphtheritic serum is a distinct advantage not to be overlooked. He feels that a concentrated serum is not so likely to produce serum sickness as whole serum, since a smaller quantity is to be injected. Boeckmann[9] prefers triple typhoid vaccine. Milk and its derivatives by various methods and under many names are preferred by many.

Again, Woods sums up the situation very well when he mentions three proteins commonly used in producing nonspecific protein reactions in American clinics. First, milk or some of its derivatives which he finds is the mildest, most variable and causes reaction in proportion to its bacterial content. Second, antidiphtheritic serum. The reaction following its use is usually sharper than the reaction following milk. Third, bacterial vaccines, usually typhoid, which may be given either subcutaneously or intravenously, preferably the latter.

The dosage of the milk proteins intramuscularly varies from two to ten c.c. Key gives 1000 to 5000 units of antidiphtheritic serum and has seen no serious anaphylactic effects in 170 cases treated. Scarlet prefers to designate the dosage in cubic centimeters of horse serum rather than in units of antitoxin and feels that the effective agent is almost surely the horse serum. He feels that three cubic centimeters is a sufficient dose given intramuscularly. Boeckmann starts with one-half mm. doses of triple typhoid and is guided in his dosage by the resulting leucocytosis. Typhoid vaccine dosage varies from ten to twenty million intramuscularly as the initial dose, increasing by from two to ten million in subsequent doses.

While observers differ as to detail, it is pretty generally conceded that the results of this form of therapy are dependent on the stimulation of the fixed cells. Woods states that the reaction is essentially diphasic, the first stage being characterized by the rather violent general symptoms and by increase in the local inflammation. The second stage is characterized by the definite beneficent effect in the resolution of the inflammatory process. Nonspecific protein therapy should be used while the cells are still definitely capable of stimulation and not when the cells are effected or exhausted by a long drawn out disease. Scarlet quotes Jobling to the effect that "there may be a production and mobilization of specific antibodies or there may be nonspecific antibodies. Then, too, the hyperpyrexia may exert a beneficial influence, as it is well known that a high temperature artificially produced acts favorably on an established infection."

Our clinical experience with foreign proteins has been in the last twelve or fifteen years limited almost exclusively to the use of milk and typhoid vaccine. In a few instances we have used antitoxin, horse serum, and antitetanus serum, combining the specific and parispecific action of the latter. In some instances, where unusually good results were obtained from the use of tuberculin, I have felt that the result was from the parispecific rather than the specific action of the agent. The intramuscular dose of boiled milk varies from 2 to 3 c.c. in very young infants to 12 to 15 c.c. in robust young adults. It is our custom to use milk in the average cases of ocular inflammation, reserving the vaccines or serums for the more serious conditions or those which do not respond to milk.

Our initial dose of typhoid vaccine to a vigorous young adult is 20 million, possibly doubling the dose on the second day with subsequent increases and frequency of dosage, depending on the reaction of the patient and the effect on the inflammatory process.

We have found this form of therapy of special value in iritis, cyclitis, etc., corneal inflammations and gonorrheal infections of the conjunctiva. We have never used it to the exclusion of other forms of therapy and in common with other observers we feel that it is definitely contraindicated in cases of diabetes, alcoholism, pregnancy and generally lowered resistance.

In dealing with acute infections of the anterior segment of the globe with severe pain, as in iridocyclitis or active keratitis or where we wish to forestall or clear up plastic exudate in the pupillary space, limit corneal involvement, or stop a gonorrheal ophthalmia, we have found this form of therapy to be of definite value. It should be given a prominent place in the treatment of sympathetic ophthalmia, although in our experience it has not given the spectacular results reported by some observers.

CONCLUSIONS

The particular protein employed depends largely on the experience and preference of the physician. Milk is always available, can be quickly prepared, is easily administered, and is almost absolutely free from danger and in many instances the results are all that could be desired.

Serums and vaccines give a more pronounced reaction. The dosage is more exact and some feel that the results are more satisfactory. However, these agents are not always available. In using the serums the patient's sensitivity should be determined to avoid alarming anaphylactic shock and intravenous administration of the vaccines in some patients is difficult.

As emphasized by several observers, the use of foreign protein in the treatment of general or local conditions should not be considered a routine treatment to be given in all inflammations. Each case should be carefully studied, the particular protein selected best suited to meet the condition, contraindications carefully eliminated, and the dosage regulated by the reaction which we wish to produce on the inflammatory lesion. The general condition of the patient must be carefully watched and the dosage reduced or a milder agent selected as indicated.

There is no question but that, when intelligently used, this form of treatment gives relief from discomfort and in many cases has a definite curative influence not only in inflammations of the eye, but in acute general inflammatory processes as well.

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MALIGNANCY OF THE GASTROINTESTINAL TRACT

EVALUATION OF STOOL EXAMINATIONS IN THE DIAGNOSIS *

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The early diagnosis requisite for the successful treatment of cancer would be a matter of less concern, if only there were some test or characteristics of malignancy that were thoroughly dependable. Unfortunately we have not such a test at our disposal. On the contrary, we are dependent upon a very heterogenous mass of evidence, none of which is very reliable, when we are dealing with cancer in its incipiency.

The diagnosis of early gastrointestinal malignancy is not an easy matter, even when studied under the most favorable circumstances. The physical examination, although of great importance, may not give us any definite information. The history, if not obtained with great care and accuracy, is likely to be very misleading as there is no sharp dividing line in many cases between the organic and the purely functional manifestations. There are no symptoms pathognomonic of early malignancy of the gastrointestinal tract, therefore we are dependent largely upon certain laboratory procedures and the use of the roentgen rays for our early diagnosis. Only by rigid application and careful interpretation of all the procedures at our disposal may we hope to lessen our percentage of error.

Statistics show that 50 per cent of all the cancer in the body has its origin in the gastrointestinal tract. Consequently our responsibility must be more keenly felt, when we stop to consider that in no portion of the body is our opportunity greater to effect a cure, if diagnosis is made early. At the present time our attention is constantly being focussed on the ever increasing incidence of cancer. We are confronted daily with the gruesome aspect of cases that have passed beyond the stage where they may be aided materially and no special skill is necessary for diagnosis. Under these circumstances surely any test or procedure that will be of aid in making an early diagnosis or will serve to arouse our suspicions as to the cancer probability in any case is worthy of our consideration.

Examination of the feces has been recognized as a valuable procedure in the study of gastrointestinal diseases and disorders for many years. Most of the pioneer work in this field was done by German investigators. It was not until about the beginning of this century, however, when chemical tests for the detection of small amount of blood in the feces was first introduced, that it became recognized as an important procedure in the diagnosis of gastrointestinal malignancy. Today there seems to be a real danger that it is losing some of its early popularity. The reasons for this apparent neglect are, I think, to be found in the rapid development in roentgen facilities and technic offering a short cut to diagnosis, the lack of confidence in the meaning and interpretation of stool findings, and, lastly, the inability on the part of many to devise adequate and satisfactory means for obtaining these specimens in office practice.

In our office examination of the feces is treated as a routine procedure. We feel that the frequent rewards received in the way of a more positive and timely diagnosis or the picking up of some unsuspected malignancy has repaid us many times for our efforts. Each patient upon his first visit to the office is placed upon a blood-free diet, and is provided with air tight pasteboard cartons as stool containers. They are instructed to begin saving stool specimens on the second day of their examination, thus allowing time for the passage of any ingested blood.

The stools obtained are examined as to their form and consistency, the macroscopic evidence and character of blood, mucus and pus, and amounts present are recorded on a plus 4 basis. A routine test is made on all stools for occult blood. For this purpose a small portion of feces is selected from the inner part of the stool in order to avoid any contamination from blood on the outside of the stool coming from fissures, abrasions or hemorrhoids at the outlet. The feces secured is placed upon a clean glass slide, and is treated with a solution composed of benzidine sufficient to saturate 2 c.c. of 50 per cent glacial acetic acid, and to which has been added an equal portion of hydrogen peroxide to make a clear solution. If blood is present, a bluish discoloration will appear in less than two minutes, depending in rate and density upon the amount of blood present.

This test is roughly sensitive to 200 red blood cells to the c.c., or the taking of 1 c.c. of blood per day by mouth is sufficient to give a positive blood reaction in the stools. Objections to this test have been made on the basis of its extreme sensitivity

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* Read before the Fifty-fifth Annual Meeting of Oregon State Medical Society, La Grande, Ore., May 16-18, 1929.

and the likelihood of contamination from other sources, thus making the interpretation of a positive finding very uncertain. The most obvious sources of error are to be found in easily bleeding gums, traumatic bleeding from the passage of a stomach tube, introduction of blood with the food or feeding of certain drugs, all of which are comparatively easy to rule out or control. Lastly and of great importance is the microscopic examination of the feces for blood, mucus, pus, tissue and so forth which may give us a clearer insight into the nature of the process with which we are dealing.

In order to evaluate stool examinations in the diagnosis of gastrointestinal malignancy I reviewed some ninety cases from our office records as to stool findings, and formed the following conclusions as to its relative importance in the diagnosis of cancer in the various general regions in which it is most prone to occur.

CANCER OF THE ESOPHAGUS

In the diagnosis of cancer of the esophagus there is less to be gained by stool examination than in any other portion of the gastrointestinal tract. The primary symptom of dysphagia localizes the trouble to this organ and roentgen-ray examination, if properly conducted, in the majority of cases gives evidence of the nature of the lesion. Further evidence may be obtained by the passing of a bougie or by direct examination with the esophagoscope, but this is seldom necessary for diagnosis. For this reason, of the twenty cases of cancer of the esophagus studied, stool examination for occult blood was made in only three. Two of these showed persistent bleeding and one was negative.

CANCER OF THE STOMACH

The primary concern in examination of feces where cancer of the stomach is suspected has to do with the presence of blood intimately mixed with the feces. In these the blood is usually so small in amount, and has been so changed in character by the fluid in the stomach and small intestines that its presence is usually not detected by other than chemical means. However, if the bleeding has been massive, which is the exception in malignancies, it assumes a black or brownish black appearance in the feces. In a series of sixty-one cases of cancer of the stomach, in which adequate stool examinations were made, fifty-one showed persistent bleeding. In six cases the bleeding was of the intermittent type and in four no blood was detected at any time during the period of observation. In many of these cases the test was found to be of material aid in the diagnosis, often being the first sign that made us aware of the cancer probability, appearing before any of the common objective or subjective symptoms had developed to any appreciable extent.

In cases of gastric ulcer, in which we had reason to suspect the presence of malignant degeneration, the test was often profitably used in making a more positive diagnosis. These cases were hospitalized and placed on a Sippy management and a blood-free diet. If bleeding persisted beyond two to three weeks of such management, they were considered as malignant in most cases and surgery was advised without further delay. If in the course of medical treatment of any gastric ulcer the presence of occult blood in the feces was noted, the probability of cancer was considered. In comparing the cases of gastric ulcer with those of gastric cancer it was found that the tendency to bleed in those of gastric ulcer was markedly less; it was almost invariably of the intermittent type, and the tendency to frank hemorrhage was found to be much greater, producing black, tarry stools, whereas in gastric malignancy it was the exception rather than the rule to detect the presence of blood in the feces macroscopically.

Any patient of the cancer age, complaining of discomfort after meals, diminishing appetite, slowly failing strength and loss of weight, who has previously been well, should be regarded with suspicion. These people should have a thorough gastrointestinal study. It may not be possible in every case to use the roentgen ray as freely as we would like in office practice. However, few excuses can be offered for not examining the blood, stomach secretions and the stool for occult blood. These procedures alone if properly conducted will in a large majority of cases give us sufficient information to make at least a tentative diagnosis.

CANCER OF THE SMALL INTESTINE

This is a rare condition but when encountered is very difficult of diagnosis. Because of the fluid content of the small intestine the first symptoms pointing to the lesion are those of obstruction. A palpable mass is seldom felt and the roentgram helps very little in early cases. These, however, are prone to bleed, and of the cases in our office records the persistent presence of occult blood in the stools was the earliest and most outstanding manifestation. By the process of elimination it might be possible to locate the lesion early in some cases. The first essential, however, is not necessarily the localization of the lesion but the establishing of a cancer probability, making an exploratory operation a justifiable procedure. If the finding of occult blood in the stools will help to carry us this far in the diagnosis, certainly it is a most valuable procedure. I would like to cite a case history of such an instance.

Case 1. Mr. I. aged 60, came to our office on March 2, 1927. He gave a history of typical ulcer distress of one year's duration. For six months he had noticed some loss in strength and paleness. There had been a seven pound loss of weight over this period. His appetitie had been very good. His bowel function had been regular and quite normal except for occasional loose movements and increased gas formation.

The physical examination was essentially negative except for moderate hemorrhoids and a fairly large and firm prostate. Proctoscopic examination was negative. His blood showed 3,660,000 red cells; 7,900 white cells and 53 per cent Hgb. The differential count was normal, except for some variation in the size and shape of the red blood cells. The urine showed a trace of albumin and an occasional hyalin cast. The kidney function test showed a 48 per cent phenolsulphonephthalein excretion in one and one-half hours. The stools were persistently positive for occult blood. The roentgram revealed a defect in the greater curvature of the stomach one to two inches proximal to the pyloric ring. There was a persistent deformity of the cap and moderate pylorospasm which subsided with atropine. There was no evidence of pathology in the small intestine or colon.

On ulcer management the patient's symptoms subsided but the blood in the stools persisted, making us suspicious of a hidden malignancy. The entire gastrointestinal tract was reexamined with the roentgen ray and no further evidence of pathology found. Because of the persistent occult blood in the stools the question of an exploratory operation arose and a consultation was called. The patient was feeling so well that it was decided to observe him longer. One month later the stools were still positive for occult blood but the patient refused an exploratory operation. During the course of the next six months two roentgen studies were made and no further change was found. The patient had gained about eight pounds in weight and the blood had maintained quite a constant level, around 4,000,000 red cells and a Hgb. of 70-80 per cent. During this period the patient had been treated with the quartz light and intravenous iron in addition to his ulcer management. The stools were still positive for occult blood.

Nine months after the patient presented himself for examination he went to California for three months and upon his return stated that he was feeling fine. This was the last we heard from him until some nine months later he was operated upon for acute intestinal obstruction and died shortly following the operation. The operation revealed a carcinoma of the ileocecal ring with metastasis to the liver and the serosa about the primary growth and cecum. The autopsy revealed in addition a healed gastric ulcer on the greater curvature, one and one-half inches proximal to the pyloric ring.

The most constant finding in this case was the persistent occurrence of occult blood in the feces and I believe that, if it had been possible to bring this patient to surgery some fourteen months earlier, he would be alive today. Eighteen months had elapsed since he first presented himself for examination and we have reasons to suspect that the growth began six months to a year prior to this date.

CANCER OF THE COLON

Comparatively speaking, cancer of the colon is a chronic and local disease. Many of the cases are of long standing, and make relatively few inroads upon the patient's health. It is a known fact that a considerable percentage of cases that go to postmortem are localized. Here, as in cancer of the small intestine but to a lesser degree, the appearance of any tell-tale symptoms or signs are often a late manifestation. The use of the roentgen rays, especially with the barium enema, is a very valuable procedure, but unless employed by a skilled observer is likely to lead to many errors in diagnosis, because of the many loops and folds encountered and the great tendency to spasm.

It is in these cases that stool examination as an aid to diagnosis is of prime importance. Aside from the change in character in the stool that may occur but is not of any great diagnostic value, mucus and blood in varying amounts are very often found, especially after the stage of ulceration begins. Blood in microscopic quantities is probably always present and may be recognized by chemical means in the majority of cases. In a series of twelve cases a positive benzidine test was persistently found in ten.

Cancer of the colon most frequently occurs in the fixed areas subjected to the greatest trauma and irritation. Possibly for this same reason cancer of the colon is prone to ulcerate early. In the distal colon the presence of firm fecal material adds an additional traumatic factor which may predispose to early bleeding. Occasionally an acute hemorrhage occurs which frightens the patient into consulting a physician sooner than he ordinarily would. A constant slight hemorrhage from the bowel may produce a slow progressive anemia, and it should be routine procedure to examine the stools in any patient presenting such a picture.

After the stage of ulceration begins and a point of irritation is set up in the bowel wall there is often a pouring out of a clear viscid mucus, usually streaked with blood and containing pus. This may be rather intimately mixed with the stool, if the movements are loose, or if not, it may be passed as rather large polypoid masses of pure mucus. This is especially prone to occur in the tumors of the pelvic colon. The presence of mucus of this character should always arouse suspicions of a growth either in the rectum or colon.

It is my belief that, if all cases coming to us and complaining of symptoms referable to the gastrointestinal tract were given a careful stool examination, there would be fewer cases of cancer of the colon reaching the stage of obstruction and inoperability. Certainly there is no portion of the body more amendable by surgery if taken early. I wish to cite briefly a case history which illustrates the point I wish to make.

Case 2. Mr. B, aged 37, presented the following complaints. For six years he had been subject to cramp-like pains in the upper abdomen, accompanied by bloating, nausea and vomiting, and a stoppage of the bowels. Following an attack he would have diarrhea. Each attack was preceded by a migraine type of headache. Previous to the beginning of his present complaint he had had suggestive ulcer distress. Ten days before presenting himself for examination he had passed several black tarry stools, following which he had felt quite weak. Two years before the patient had had his appendix removed and abdomen explored during one of the attacks described.

The physical examination was essentially negative except for tenderness throughout the colon and in the epigastrium. The proctoscope passed to 18 cm. revealed no lesion. His blood showed 4,992,000 red cells, 10,000 white cells and 62 per cent Hgb. The differential count was normal. The urine was negative. The stools showed occult blood in all specimens. The roentgen examination was negative throughout except for a persistent deformity of the duodenal cap. Ulcer management and hospital observation was advised. The stools continued to show occult blood and while in the hospital the patient had one of his typical attacks. A second roentgen study revealed a defect at the splenic flexure in the colon. Because of the persistent bleeding a malignant growth was suspected and an exploratory operation was advised. It revealed a carcinoma of the splenic flexure which was successfully removed. The patient is alive and well today, fifteen months after the operation.

This is a case in which we feel that the stool findings were largely responsible for the diagnosis.

CANCER OF THE RECTUM

There is probably no place in the body where a cancer may develop that we have less excuse for not making a diagnosis as soon as the patient presents himself for examination. Many cases, however, are overlooked until the stage of operability is passed. Perhaps the most common error is the diagnosis of hemorrhoids, where a carcinoma actually exists. Because of the accessibility of the rectum to digital examination and its visibility with the proctoscope we have been enabled to make a more accurate study of the behavior of cancer in this region. It is thought that cancer of the rectum has a definite latent period, the exact length of which is not known and doubtless varies, but is considered to extend from a few months to a year. This comprises a preulcerative period in its growth, in which no symptoms may be manifest in sufficient degree to cause a patient to consult a physician. Perhaps the most valuable symptom, if it occurs during this period, is the sudden interruption of a previously normal bowel function by constipation. Any patient in the cancer age presenting such a symptom should incite our suspicions and lead to a thorough investigation and a verification of his statements.

After the ulcerative stage begins symptoms of a more definite character develop, due to the irritation set up in the mucosa in or about the ulceration. Constipation may give way to diarrhea or intermittent diarrhea and constipation, with a frequent desire to go to stool or a sensation that the rectum has not emptied itself completely. At this stage the stool may be streaked with blood or a frank hemorrhage occasionally occur. It is very often that the appearance of blood is the first sign that causes the patient to consult a physician. Upon more careful examination of the stools they may be found to contain bright red blood or streaks of blood clinging to the outside of the firm stool. Mucus is almost invariably present and pus is quite a constant finding. In a series of fourteen cases of cancer of the rectum blood, mucus and pus were found in varying amounts in all the cases but one.

Occasionally the main body of the growth may not encroach upon the lumen of the rectum and only a very small portion of it may ulcerate through into the rectum. These cases are easily missed on digital examination. One of these cases in particular was entirely overlooked on the first examination, but the persistence of fresh blood and mucus in the stools led us to make a more searching investigation a few days later which disclosed a small ulcerated area about four inches proximal to the anal opening. The symptoms in this case were those that we commonly encounter with an ordinary irritable bowel. The patient had not noticed blood or mucus in the stools. Consequently it would have been an easy matter to have completely overlooked the lesion for sometime at least, had it not been for the unexplained presence of blood and mucus in the stools. It is a gross neglect and no justifiable excuse can possibly be offered for a failure to make a thorough investigation of the rectum in the presence of any of these signs or symptoms.

COMMENT

The data presented, although observed in the course of our usual clinical study of each case, tend to point out the constancy with which blood is found in the feces in the presence of malignacy of the gastrointestinal tract. It often leads to a correct understanding of the condition when other methods have failed.

The presence of blood, mucus or pus in the feces should be considered with serious respect, and never be disregarded without a thorough examination when found under proper conditions. No gastrointestinal study should be considered complete without an examination of the feces.

THE CARCINOMATOUS GASTRIC ULCER

CLINICAL AND PATHOLOGIC CONSIDERATIONS *

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Medical literature has until recent years laid considerable emphasis upon the moderately advanced and late clinical signs and symptoms of many of our more common disease syndromes. The early symptomatology was often overlooked, misinterpreted and disassociated from the more apparent and often hopeless condition which received most of the emphasis. Fortunately for our conception of disease, clinical research in the past two to three decades has been towards early diagnosis and recognition of incipient disease. This trend in medical procedure is of greatest importance in diseases where malignancy is the causative agent, since here prevention is synonymous with an early recognition of its presence and with adequate measures being instituted for its control and attempted cure.

The interest of the medical profession in the early diagnosis and management of cancer of the stomach is not without justification, when we consider that it is the most common of all forms of cancer and is responsible for approximately thirty-eight per cent of all deaths from malignant disease in the United States. With the incidence of deaths from gastric cancer increasing, as it has from 212 per hundred thousand in 1900 to 311 per hundred thousand in 1920, there can be no question about the challenge to the profession for early recognition of its presence. Pessimism in the surgical management of gastric malignancy has been well founded, due to the late stages in which the disease is seen by the surgeon. About 51 per cent of the cases of carcinoma of the stomach coming for diagnosis are clinically operable and in only about 32 per cent of the total number is some form of surgical removal of the lesion justifiable. These are surely figures which demand that we focus more attention upon the early stages of a disease as insidious and destructively progressive as gastric carcinoma.

It was this interest which led to an investigation of the early stages of gastric cancer while a Fellow in Surgery under the Mayo Foundation, and we are indebted to the Mayo Clinic for the privilege of reviewing the case histories and pathologic material which form the basis of this investigation. Lack of time makes possible only a cursory report of this study.

A series of 1142 consecutive cases of gastric cancer were studied, representing cases operated upon at the Mayo Clinic during a five-year period, 1920-1924. In order to segregate the smaller circumscribed carcinomatous lesions from the larger ulcerating cancers an arbitrary grouping was adopted. In group I were placed all ulcers less than 4 cm. in diameter. Group II represented all lesions called carcinomatous ulcers by surgeon or pathologist which measured larger than 4 cm. in diameter. In Group III were placed cases of carcinomatous ulcers, so diagnosed by the surgeon at the time of operation but in which the perforation of the lesion and perigastric involvement prohibited resection, but permitted gastroenterostomy. Gland biopsy and the subsequent death of the patients from cancer confirmed the original diagnosis of this group.

The histories of the cases in groups I, II and III were then reviewed and classified according to the type of history presented and the duration of symptoms. The gastric chemistry, roentgen findings, medical and surgical diagnoses were likewise classified for each group.

A review of the literature brought to light a rather confused conception of the carcinomatous ulcer problem. Some have described this lesion as a carcinoma-on-ulcer, presupposing a benign ulcer base but with no proof justifying such a sequence. Others have called this a gastric ulcer undergoing carcinomatous change, as an ulcer associated with carcinoma and as a primary ulcerating cancer.

There is need for a clarity of terms before submitting a discussion of the problem, and for this paper the following three terms shall apply. The term carcinoma-on-ulcer may be applied only to a

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relatively small group of circumscribed malignant ulcers of the stomach and only after a careful clinical pathologic study has revealed evidence of a preexisting benign gastric ulcer with carcinomatous change superimposed. Criteria for such an investigation have been established by Hauser, Anschutz and Konjetzny, Stromeyer, Ewing, Spillsbury, Warthin, Dible and M. J. Stewart but will not come under the scope of this paper.

The term, carcinomatous ulcer, may be applied after clinical and pathologic study has convinced the pathologist that the lesion is a primary carcinoma of the stomach, which during its early stages is assuming the morphologic characteristics of a benign chronic gastric ulcer. In this paper the group I lesions, less than 4 cm. in diameter, will be considered as carcinomatous ulcers.

The term ulcerating carcinoma will be applied to a primary carcinoma of the stomach with diffuse ulceration of the gastric wall, but without perforative phenomena and without the morphology characteristic of benign chronic gastric ulcer. The lesions of group II, larger than 4 cm. in diameter, come under this classification.

It may be of interest to note that in the series of 1142 clinically operable gastric carcinomata, the rate of carcinomatous ulcers to ulcerating carcinomata was 1:16, but of the resectable cancers of the stomach, one in every five cases was a carcinomatous ulcer. During this same period, 1920-1924, there were five benign ulcers operated on to one carcinomatous ulcer of group I.

It thus becomes apparent that the carcinomatous ulcer represents the stage in the development of gastric cancer when the disease is circumscribed, clinically symptomatic and surgically amenable to a five year cure in many instances. It is also the stage during which a small carcinomatous ulcer may be confused clinically, roentgenologically and at operation with that of benign chronic gastric ulcer. To date we have no accurate clinical data which will differentiate in every instance a benign chronic gastric ulcer from the early carcinomatous gastric ulcer. It is true that as the lesion increases in size the roentgenologist will become more positive in his belief that the ulcer is malignant. However, the more positive the roentgen findings are the less positive does the surgeon become that the lesion is curable.

With the ulcerating carcinomata of group II, surgical intervention is more often palliative than curative.

The common clinical conception of gastric carcinoma in the minds of many laymen and physicians is still that of the medical textbooks of the last decade and represents the rather hopeless clinical picture of advanced cancer, with its pallor, weight loss, anorexia, palpable epigastric mass, progressive weakness and cachexia. Too often the diffuse ulcerating carcinomata give this picture before gastric symptoms bring the patient to the physician. Often the first symptoms to appear, following the latent stage of carcinoma, may be those of a mild dyspepsia in a person over thirty-five years of age, previously free from gastric symptoms. These may be treated by home remedies for a period of time, but in this cancer-conscious age we hope that such a symptom-complex will not be so lightly treated by the family physician first seeing the patient without submitting his patient to a careful clinical analysis, supported by roentgenography, to determine the cause of such apparently mild and innocuous symptoms. Diffuse ulcerating cancer of the stomach may present a bizarre type of early symptoms, which do not become characteristic until a later stage is reached. Many of these lesions do not produce pain until the later stages of cancer invasion have been well established.

There is, however, another clinical picture which also represents the early stage of gastric cancer but in which periodic pain, related to food intake, brings the patient to the physician at a much earlier stage in the development of the malignancy. The clinical history may sound as relatively benign as that of the previous group during its initial stages. The symptoms may date from several months to several years, with all of the features of a peptic ulcer syndrome. There may be epigastric pain and distress, occurring from one to three hours after a meal with food and soda relief and frequently relief by vomiting. Periodicity of symptoms may be noticed with periods of symptomless remission. Under ulcer management some of these patients may even show a temporary gain in weight. The gastric chemistry may be normal or show a hyperacidity and the roentgen findings that of a penetrating gastric ulcer.

At operation, however, if these patients be fortunate enough to come to early operation, both surgeon and pathologist find themselves confronted with carcinoma, masking under the morphology commonly ascribed to a benign chronic gastric ulcer. The ulcer crater is there as represented by the roentgenogram, but either malignancy has developed

TABLE I

Type of Gastric Lesion	Total Number Cases	Ulcer-type of History 5 Years or More			Average Duration Symptoms; in Total Number of Cases
		Cases	Per Cent	Average Duration of Symptoms	
A. Carcinomatous Ulcers					
Group I	139	26	18.7	14.4 years	4.59 years
Group II	56	3	5.3	8.0 years	2.92 years
Group III	24	4	16.6	9.0 years	2.80 years
B. Gastric Cancers—excluding Carcinomatous Ulcers	913	14	1.5	17.5 years	11.26 months
C. Gastric Cancers—including Carcinomatous Ulcers	1142	44	3.8	10.34 years	2.07 years
D. Benign Gastric Ulcers surgically proven	556	300	53.9	13.4 years	8.02 years

TABLE II

Gross Pathology	Group I			Group II		
	Free HCL Per Cent	Achlorhydria Per Cent	Average Size Ulcer, cm.	Free HCL Per Cent	Achlorhydria Per Cent	Average Size Ulcer, cm.
Ulcerating Carcinoma Type of Lesion	70.58	29.41	3.12	46.80	53.19	6.25
Chronic Gastric Ulcer Type of Lesion	95.00	5.00	2.34	66.66	33.33	5.00
Total Number of Carcinomatous Ulcers	79.85	20.15	2.79	53.06	46.93	5.20

upon a long standing chronic gastric ulcer, or the neoplasm developing in the gastric lumen of normal or increased acidity has undergone the same ulcer formation in the poorly nourished center of the neoplasm that is found in the development of a benign gastric ulcer. The morphology is similar, the etiology and pathology different. The correct diagnosis of such a lesion, based upon morphology and its effect upon gastric physiology, may be misleading, and the clinician's possibility for error greatly increased. Diagnosis based upon pathology and actual visualization of the lesion must of necessity be more accurate. Hence the surgeon and pathologist must be the final arbiters in such cases of penetrating gastric lesions, in which benignancy cannot be definitely established.

The problem of the gastric ulcer is, then, not such that it is submitted to surgery because of the fear that it might become malignant but because of a well grounded suspicion that it may at the time be a carcinomatous ulcer morphologically and clinically indistinguishable from a benign chronic gastric ulcer.

From the table which I show you (table I) it will be seen that there is a difference in the duration of symptoms, depending upon the morphologic appearance and gross pathology of the lesion. Plaut,[1] in 1924, was among the first to present a series of cases which demonstrate that a primary carcinomatous ulcer with an ulcer-type of history may exist for from three to five years as a primary carcinoma. Anschutz and Konjetzny[2] have expressed the opinion that carcinoma of the stomach may be a slow-growing neoplasm. Many of the Continental surgeons feel that under two years duration one must consider a carcinomatous ulcer a primary cancer. We have no accurate statistics based upon the so-called "silent or symptomless period" of gastric carcinoma. Diffuse gastric cancer may be present and growing for a much longer period than the short average duration of symptoms would seem to indicate. The onset of symptoms usually dates from gross hemorrhage, from the time the size of the neoplasm causes disturbance with the motor mechanics of the stomach, or when perigastric invasion occurs. The growth up to this period may be symptomless and may even present a palpable epigastric mass as first evidence of its presence.

There is, on the other hand, the penetrating type of lesion represented by the carcinomatous ulcer. This type penetrates the submucosa and muscularis and differs in this respect from the diffuse gastric carcinoma which grows into the gastric lumen by an overgrowth of neoplastic tissue usually in the presence of a lowered gastric acidity. The carcinomatous ulcer is practically always centered in a mass of growing carcinoma with a tendency to destroy the neoplastic tissue as it pushes into the ulcer crater. Peptic activity and gastric acidity are higher in this group than in the diffuse carcinomata, and to a certain extent the cancer growth keeps pace with cancer destruction by peptic activity (table II).

A point worthy of clinical notice may be emphasized here. The penetrating carcinomatous ulcer simulates the benign ulcer by giving symptoms from the onset. This is not the case with most diffuse, late-ulcerating cancers. The carcinomatous ulcer base is formed by and penetrates the muscularis. The gastric secretion is permitted to produce irritation reflexes in the neuromuscular structure of Meissner's and Auerbach's plexus. It is these reflex changes in the motor function of the stomach which in turn are translated into the clinical symptoms of dyspepsia of organic origin.

Here, then, lies the most important problem of the clinician in dealing with carcinoma of the stomach, to recognize and establish the doubtful nature of the carcinomatous lesion in the ulcer stage, the stage in which the symptoms produced are due to the local effects of implantation of the cancer in the stomach wall. Appreciation of this fact will aid in bringing carcinoma of the stomach for surgical treatment at an earlier stage than has heretofore been done.

Should the implantation of carcinoma in the stomach wall, however, assume the characteristics of a diffuse, progressive involvement without penetration or ulceration of the deeper layers of the gastric wall, we may expect an absence of early symptoms and a latent period in the cancer development. This latent period gradually blends into one of vague local gastric symptoms, upon which is almost simultaneously superimposed the well known systemic signs and symptoms of advanced gastric cancer. This group, with its insidious onset, offers a diagnostic menace which only frequent medical examination can combat. It is the carcinomatous ulcer group, then, which offers a challenge to the clinician for the early diagnosis and treatment of gastric cancer, because here are symptoms and signs pointing to organic disease of the stomach long before systemic evidence of malignancy is present.

From a study of glandular involvement it was found that approximately one-third of the group I carcinomatous ulcers showed no involvement of regional lymph nodes or extension of the malignancy to the serosa. Only one-fifth of the ulcerating carcinomata gave such favorable surgical possibilities. The smaller the carcinomatous ulcer the more favorable the chance for a surgical cure of the cancer. It may be also aptly stated that the longer the supposedly benign but carcinomatous gastric ulcer is treated medically, the shorter the patient's postoperative life. Even though morphologically there is very little increase in the size of the carcinomatous ulcer under treatment, there is a constant, progressive spread of cancer in the regional lymphatics.

CONCLUSIONS

Briefly, in conclusion, the carcinomatous ulcer in its early stages represents the only curable stage of gastric carcinoma. It is unfortunate for the patient that this lesion should mimic ulcer so closely in many instances.

Diffuse gastric cancer with extensive shallow ulceration may have its initial onset as a latent period and hence is one of the most insidious types of carcinoma to apprehend in its early stages.

A closer cooperation is urged between clinician, roentgenologist, surgeon and pathologist in the early diagnosis and surgical treatment of the ulcer stage of gastric cancer, the carcinomatous gastric ulcer.

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Clinical Hyperparathyroidism. Julia D. Boyd, J. E. Milgram and Genevieve Stearns, Iowa City (*Journal A. M. A.*, Aug. 31, 1929), report on a patient who came for consultation because of progressive bowing of the legs. The routine examination revealed some anomalies of the urine, and as a result a tentative diagnosis of renal rickets was made. This led to extensive chemical studies, which served to indicate that parathyroid hyperfunction was the primary cause of the condition. Although there was no external evidence of a parathyroid tumor, an exploratory operation was performed. A tumor of the left lower parathyroid was found which, on examination, proved to be an adenoma. Following its removal, the chemical abnormalities were corrected and the patient's health was much improved. They found that clinical hyperparathyroidism has but recently been recognized as an entity. They have found reports of only five instances other than their's and in two of these the diagnosis, based on the clinical and laboratory observations, was not confirmed by operation. In three reported instances a parathyroid tumor was removed, and in each the patient's symptoms were definitely alleviated. The incompleteness of the reports of these cases makes a thorough correlation not possible. However, there are many outstanding similarities between the six patients which are sufficiently constant to permit the formulation of the syndrome characteristic of the condition. They conclude that clinical hyperparathyroid may give rise to functional impairment of the gastrointestinal, renal, osseous and muscular systems.

THE MORTALITY OF APPENDICITIS IN CHILDREN

A CRITICAL ANALYSIS*

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The general mortality rate of appendicitis, as given by various writers during the past few years, averages from 2.2 to 5.9 per cent. This includes all types of the disease and varies from 0.15 per cent in a series of 688 acute, nonperforative cases, to 14.4 per cent in a general statistical review from the records of the Bureau of Vital Statistics. The rate in the United States is slowly but steadily rising, while in other countries where reasonably accurate vital statistics are available, the rate is either stationary or gradually falling.

During this time many writers in discussing appendicitis in children have reported mortality rates varying from 9.7 to 33 per cent, and have universally noted that the mortality is markedly higher than in adults. In attempting to account for this many reasons have been advanced, but by subjecting these to a critical analysis it would seem possible to reduce them to five which are inclusive and fundamental and which we may term mortality factors. They are (1) difficulty of diagnosis, (2) delayed medical attention, (3) the misuse of purgatives, (4) physical conditions peculiar to children, and (5) poorly timed and poorly executed operations. All of these factors unquestionably influence the mortality rate, but can not their influence be reduced or even eliminated? In view of the present distinctly upward trend of the death rate a candid discussion of them would seem timely.

Difficulty of Diagnosis. Why is the diagnosis difficult? The reasons most frequently heard are that children are constantly having more or less transient pains in the abdomen, that they vomit on the least provocation and from a large variety of causes, that acute respiratory infections and acute contagious diseases are often initiated with abdominal symptoms, that children are so hard to examine satisfactorily.

Will these reasons bear careful scrutiny? Does the *normal* child have frequently recurring pains in the abdomen? Certainly not. Such pains call for a determination of the causative factor, whether it be appendicitis, dietetic irregularity, enteritis, respiratory infection, inflammation of extraabdominal structures or other cause. The fact that children frequently do have pains in the abdomen, with or without vomiting, cannot be used as a cloak behind which we may hide, if we have failed to eliminate appendicitis as a cause.

The difficulty in differentiating an acute respiratory infection from appendicitis is occasionally great. This is a real diagnostic hazard, and frequently necessitates a most careful estimation of the physical and laboratory findings and the history of previous attacks or exposure to respiratory or contagious disease. Failure to obtain a satisfactory examination of the patient is rarely excusable. No matter how spoiled a child may be, if he has an acutely inflamed appendix he is in a chastened frame of mind, and if we are unable to examine him it may be safely assumed that the fault lies with our own psychologic or physical methods rather than with the child.

The difficulties of diagnosis, with the one exception of the acute respiratory pitfall, are generally greatly exaggerated, and are usually due to deficient diagnostic ability on the part of the examiner or to his unwillingness to spend the necessary time upon his procedures. The medical profession has met and overcome much greater diagnostic difficulties than those presented by these cases.

Delayed medical attention has a distinct influence upon the mortality rate. This is a difficult factor to control because fundamentally it depends upon the observations and judgment of untrained minds, complicated by social and financial conditions. The business of raising children is usually undertaken by a person who has had no preliminary training whatever, who has no qualifications beyond an intangible maternal instinct, and whose usual source of information consists of a mother or friend who has had a series of perhaps three or four cases upon which to base her advice.

It is hard for the average mother to know when to call the doctor. In many localities the cults have effectively prevented her from obtaining any knowledge of anatomy and physiology in our public schools. If she has been so fortunate as to have gone to college, she probably is not one of the few who have taken a course in home nursing, and her only knowledge of the contents of the abdomen has perhaps been gained as with half averted eyes she has hastily transferred the entrails of a chicken to the garbage can. If, in addition to possessing this foundation for making a physical examination, she is the watch dog of the family exchequer and knows the cost of medical services, it is not surprising that she puts Willie to bed with a dose of castor oil, and waits a day or two before calling the doctor. The serious consequences of this delay are too frequently before us to require further comment. The factor of delayed medical attention has a great influence upon the mortality rate and it can be reduced only by persistent education of the laity.

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* Read before the Kitsap County Medical Society, Bremerton, Wash., June 24, 1929.

The misuse of purgatives causes a sharp rise in the mortality rate, and while the influence of this factor has frequently been called to our attention, the results which are constantly appearing upon the operating table would seem to warrant further emphasis. Through recent efforts of the American College of Surgeons movies have been made available for medical groups which show the state of constant intestinal unrest produced by peristalsis in the normal abdomen, and which makes it easy to picture the veritable lashing of the intestines which must follow the use of irritant cathartics. The effect of such action upon an inflamed, edematous appendix, about which nature is endeavoring to build a protective isolation of adhesions, is all too clear as is also the rapidity with which a localized peritonitis would be converted to a general one. Any aid to evacuation must be used with extreme caution and at certain stages not even the gentlest enema should be permitted, as there is evidence that the introduction of fluid into the rectum causes some degree of peristalsis. At certain stages of inflammation it is reasonable to believe that a nonirritative saline, such as milk of magnesia, may exercise a beneficial effect by withdrawal of fluid from an edematous area, but it should be administered only after careful study of the condition makes it seem advisable.

The purgative factor in the mortality is due largely to the home conditions already discussed, and while the hope of reducing it depends to a great extent upon education of the laity, a large measure of responsibility is ours to see that we eliminate the possibility of appendicitis before prescribing cathartics.

Physical conditions peculiar to children. Those most often cited are the omentum short, thin and incapable of affording protection, the peritoneum more susceptible to infection than in the adult, the appendix more easily perforated; the child generally does not stand infection well. Of these the most important is early perforation, a factor difficult to reduce, except perhaps by the persistent education of the laity already mentioned. The bearing of the other conditions upon mortality does not bear close analysis. To be sure, the omentum is short and thin, but not disproportionately so. We certainly would not expect to find an omentum of the adult size and tensile strength in an infant. Its protective ability also is excellent, as can be attested by any one of us who has attempted to separate omental adhesions in an infant or small child. The failures of the omentum to protect can be laid to early perforation, because rupture of the peritoneal surface has followed so closely upon peritoneal irritation that there has not been time after the first chemotactic hurry-call for firm adhesions to form.

Is the peritoneum more susceptible to infection? This is hard to believe after repeatedly seeing cases recover as soon as proper drainage and removal of infectious material has given the peritoneum an even chance. Here, again, the instances where peritoneal resistance breaks down are those in which early perforation or delayed medical attention has permitted massive infection to overcome resistance.

Does the child generally stand infection poorly, or in other words is his resistance usually low? Such a contention is almost absurd. It is well recognized that the resistance of nurslings is so high that they rarely contract contagious disease. The resistance to diphtheria and scarlet fever, as shown by the specific Schick and Dick tests, is greatest in early childhood. In children the reaction to vaccination is usually mild, indicating a certain amount of resistance even to smallpox. Why, then, should we, in the face of the fact that all known specific tests of resistance rate the child high, contend that his resistance is low to pyogenic bacteria and colon bacilli which normally inhabit his skin and alimentary tract and to which he should, therefore, have developed an almost specific resistance. The answer is not a normally low resistance but rather a massive infection from early perforation overcoming a normally high resistance. The mortality factor arising from the physical peculiarities of children resolves itself into the control of early perforation and hence is a most difficult one to reduce.

Poorly timed and poorly executed operations. It is frequently stated that the time for operation is as soon as appendicitis is diagnosed or suspected. This has the one excuse for existence of any inflexible rule, that it holds true for the majority of cases, but we cannot hide smugly behind it. We are attempting to reduce mortality and this rule will not do it. On the contrary, it is a direct cause of preventable mortality.

Immediate operation is indicated in the early acute stage before perforation, and in the acute stage of general peritonitis before adhesions have formed or resistance has dropped. It is contraindicated in the early stage of localization after rupture. This is the danger stage in which the postoperative mortality is high. A carefully worked out analysis by Brown shows that the mortality rate of 2 and 2.8 per cent following operations on the first and second days of the disease jumps to 19 and 22 per cent, following operations on the fifth and sixth days respectively. He says "the increased risk of operation, especially upon children, during the first week after the time of election has passed, that is, during the third, fourth, fifth and sixth days, is recognized by all surgeons."

Other authors speak of the value of "deferred operation in selected cases," "the negative phase of immunity" from the third to the fifth day with high postoperative mortality, conservative treatment giving better results than radical during the third to the fifth day, the fallacy of the "somewhat popular idea that all cases should be operated on as soon as diagnosed." One author reports a series of forty-two cases under five years of age, eight of whom died. He insists that operation should always be performed as soon as the diagnosis is made, yet his entire mortality for that series occurred in those cases operated upon from the second to the seventh day of the disease, the danger period.

What causes this danger period? The appendix is composed largely of lymphoid tissue which is subject to sudden edema in the presence of inflammation. If this sudden edema occurs at the base, the appendix may quickly become closed and drainage into the cecum completely prevented with resulting necrosis and perforation. This perforation may occur within a few hours and adhesions are either absent or too delicate to act as a barrier to the spread of infection. Resistance, however, has not yet been worn down by massive infection or toxemia.

If we are so fortunate as to see such a patient during the first forty-eight hours, immediate operation is indicated and the prognosis is good. After this period we may encounter either a rapidly fading resistance due to toxemia from a steadily progressing peritonitis, or else a slow fall of resistance followed by a gradual improvement. In the first instance the prognosis is poor but immediate drainage must be done, accompanied by vigorous supportive measures, such as transfusion and building up the fluid and alkali reserve. In the second instance operation should be delayed, while the returning resistance is aided by nutrition, fluids and rest, and the prognosis is much better.

When there is a history of symptoms gradually increasing in severity over a period of three or four days, the patient is often seen first during the danger period. The appendix has been relieved by partial or intermittent drainage into the cecum, the irritation of the peritoneal coat has gradually increased with the resultant formation of adhesions, the child has become dehydrated and undernourished by vomiting and finally the failure to improve, coupled perhaps with the sudden sharp pain of final perforation, causes the parents to seek medical attention. It is here that much of the preventable postoperative mortality occurs. The surgeon with the inflexible rule goes blindly ahead, upsetting the delicate balance of a returning resistance, breaking down protective adhesions, spreading infection, piling operative trauma upon dehydration. How much more rational it is to wait until dehydration is overcome, nutrition is improved, resistance has risen and the positive phase of immunity has arrived. The mortality rate when such a course is followed can be markedly improved.

It is self-evident that the operative procedure influences the mortality rate. In the early acute case, with few or no adhesions before or after perforation, the appendix is of course removed. In the more advanced cases, where there are many vascular adhesions, edema, beginning abscess formation, with the appendix forming part of the protective wall, and the general condition of the child only fair, it certainly is not good surgery to open up new tissue spaces, break down the protective wall, invite dangerous oozing or general peritonitis, and prolong the operative trauma by removing the appendix. Such conditions call for a quick, simple drainage of the abscess. The absorption of toxic material is stopped, the general condition can be improved, the sinus closes and the child soon resumes his normal activities. Then after three to six months the appendix can be removed with a minimum amount of danger. It is astonishing how completely the troublesome adhesions will disappear during this time, leaving perhaps one or two fibrous cords at the point of the previous perforation. There is no edema or infection and the condition of the child is such that there is minimum operative risk.

When there is general peritonitis with free pus in the peritoneal cavity, no localizing adhesions, infection of peritoneal surfaces and general toxemia, the indication is to remove the toxic material as completely as possible and drain without disturbing the appendix. Such a course has saved many children, while to remove the appendix is flirting with a high mortality rate. In these cases the postoperative care is especially important in combatting dehydration and acidosis.

The statement is still all too frequently made that the appendix should always be removed, even in the presence of abscess formation and general peritonitis. Such an inflexible rule promotes mortality and is evidence of a sad lack of surgical judgment. It means that the surgeon either cannot recognize or else cannot evaluate variations in pathology, and that he has only one trick in his bag which he must use on all occasions.

The mortality factor which is dependent upon the proper timing and execution of operations is a great one and its influence can be very distinctly reduced by more thorough understanding of the pathogenesis of the disease, by eliminating inflexible rules of procedure and by the exercise of better surgical judgment.

SUMMARY

The mortality of appendicitis in children is much higher than in adults.

The difference seems unnecessarily great.

The five factors which contribute to this mortality may be divided into three groups. The first group has to do with the physical and phyiologic peculiarities of children and their reaction to infection, and the mortality due to these can be reduced by better diagnostic skill and more accurate knowledge of the pathogenesis of the disease. The second group has to do with conditions in the home, and it does not seem probable that the mortality due to these can be reduced to any appreciable degree except by the rather slow process of education of the laity in general and of mothers in particular. The third group has to do with our professional management of the disease, and the mortality due to this can be greatly reduced by improving our surgical judgment and by replacing inflexible, dogmatic rules by treatment which is appropriate to the individual case.

THE CARE OF ACUTE OTITIS MEDIA *

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In view of the great frequency of acute infections of the middle ear and because they so frequently lead to very distressing complications, we should give serious thought to the problems of prevention. First let me recall to your minds very briefly the principal causative factors. Acute otitis media may result from any inflammatory condition of the upper air passages. At the head of the list I would place the common cold because of its marked prevalence. Infection of the middle ear is also a common sequa of the exanthemata, especially measles and scarlet fever. It occurs very often in some epidemics of influenza. Whooping cough and diphtheria are less frequent causes. Middle ear disease frequently results from infection of the nasal accessory sinuses; from swimming and diving, and from injudicious blowing of the nose, particularly during an acute infection. Improper nasal douching and nasal operations may result in infection of the tympanum.

The chief predisposing causes are the presence of adenoids, obstruction of the nasal passage, and what seems to be a hereditary disposition toward catarrhal and suppurative affections of the upper respiratory tract. Apparently the potency of the eustachian tube and the condition of the ciliated epithelium lining the tube have considerable influence upon the development of infections of the middle ear. Naturally a short wide-open tube with inactive cilia would favor the passage of infected material into the tympanum.

In all conditions where there is an acute inflammation of the upper respiratory tract, the maintenance of adequate ventilation in the nasopharynx will help very materially in preventing extension of the infection to the middle ear. The nasal astringents, of which ephedrine is the best, are most effective in securing this result. If an acute infection is present in the nasopharynx the nasal antiseptics, as metaphen, or argyrol, should be used also. Forcible blowing of the nose should be prevented during acute upper respiratory infections. This is particularly important during the congestive stage of measles. Swimming should not be indulged in during acute nose and throat infections and proper care should be practiced at all times to prevent the

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forcing of water into the eustachian tubes while swimming or diving. The removal of infected adenoids and tonsils and nasal obstructions, and the elimination of paransal sinus infections will go a long way toward lessening the occurrence of infections in the ear drums.

Of great importance in the care of acute otitis media is early diagnosis. The disease is most prevalent in children because at this age conditions which favor infection of the middle ear are most likely to occur; and it is at this age that early diagnosis is most difficult. Particularly in infants even the most severe type of infection of the tympanum commonly produces no symptoms whatever pointing to the ear. For that reason no examination of an acutely ill infant or young child is complete without a careful inspection of the ear drums.

In the case of patients who are old enough to localize their pains we are apt to get a history of definite distress in the ear. But even in these cases certain types of infection, notably the streptococcus mucosus, may advance insidiously with little or no pain in the ear and escape detection until serious complications have arisen. In most cases of acute otitis media inspection of the ear drum will reveal unmistakable signs, such as congestion and bulging of the tympanic membrane which leads very early to obliteration of the handle and short process of the malleus. In very fulminating inflammations one may find bullae filled with a serosanguineous fluid on the surface of the tympanic membrane or on the walls of the proximal portion of the external auditory canal.

On the other hand, infections of low virulence may produce such slight changes in the ear drums as to be difficult to distinguish from the normal. There may be only a moderate thickening of the tympanic membrane with a loss of its normal lustre and a moderate infection about the handle of the malleus. Often there is also to be seen dilated blood vessels on the surface of the membrane extending from the periphery to the umbo. A moderate bulging of the membrane may be seen, due to collection of fluid in the tympanum. This is a typical picture of the so-called adenoid catarrh of children, or the acute catarrhal otitis media of adults; and from the otoscopic picture alone it is often impossible to determine whether we are dealing with an infective process in the early stages, or with a catarrhal process. In most cases, however, there are other symptoms present which will help in deciding the issue.

In an infected process there is usually an appreciable rise of temperature and usually symptoms of an acute infection in the nasopharynx. Besides, the pain in an infective process is generally more acute than in a catarrhal condition. An external otitis may produce congestion of the tympanic membrane and often considerable pain, but this condition is distinguished from acute ototis media by the absence of fever and bulging of the drum head. On the other hand, we not infrequently encounter cases with a fulminating inflammation, in which the changes in the tympanum are very slight. The condition is not uncommonly found in infants, where there is a virulent infection of the mastoid antrum, with only a moderate dullness of the tympanic membrane and more or less congestion and sagging of the posterior superior wall of the external meatus.

In other cases the only objective sign may be acute congestion and bulging of Schrapnell's membrane. The otoscopic picture produced by a streptococcus mucosus infection is usually that of a markedly thickened dull membrane with little or no congestion and only slight bulging. In fact, there is usually very little fluid in the tympanum in these cases. The typical case of acute otitis media with marked pain in the ear and marked congestion and bulging of the tympanic membrane can hardly be overlooked, but we must be constantly on our guard lest we miss the atypical case, which may result in serious consequences for the patient.

As before stated, it may not be possible to determine with certainty at the first examination whether or not the patient is developing an infective process in the ear drum. In these cases frequently repeated examinations should be made to determine whether or not the condition is progressing. Very mild types of infection of the ear drum may resolve and clear up without drainage through the tympanic membrane. As soon as the diagnosis of a progressive infection is reasonably established, however, an adequate paracentesis should be done.

It is true that a considerable number of cases will rupture spontaneously, either with or without the use of ear drops, and clear up without any serious complications. But it is also true that the great majority of patients who come to operation for mastoiditis are those in which drainage through the ear drum has not been established early. We must not forget, however, that some cases will develop a surgical mastoiditis even with the earliest possible drainage through the tympanic membrane, due to the virulence of the infection and to the conformation of the cavities.

In doing the paracentesis a mere puncture of the tympanic membrane is usually not sufficient. A wide incision should be made, generally through the posterior inferior quadrant. If there is no evidence of fluid in the posterior portion of the tympanum and there is considerable bulging and congestion of Schrapnell's membrane the incision should be made through the superior quadrant. It not infrequently occurs in infants that there is little or no bulging of the tympanic membrane but considerable congestion and sagging of the posterior superior wall of the external canal. In these cases the incision should be carried through the posterior quadrant of the membrane into the proximal portion of the posterior-superior wall. This incision sometimes serves to drain the infected mastoid antrum, and may obviate an external antrotomy.

Paracentesis may be performed with no anesthetic, with the use of local anesthetic, perferably cocaine, menthol and phenol in equal parts; or a general anesthetic, preferably nitrous oxid, ethylene or ethyl chlorid. In infants it is probably best to use no anesthetic. In older children and adults the temperament of the patient must be considered, as the local anesthetic does not make the operation painless when the tympanic membrane is congested. After the paracentesis free drainage should be encouraged by frequent cleansing of the external auditory canal.

The dry treatment, with a wick drain in the external canal may be used if a skilled nurse is in attendance; if not, frequent syringing of the canal with warm boric acid or saline solution is best. The use of hydrogen peroxide drops before irrigation usually helps to clear out the thick discharge. The treatment should be repeated every two or three hours in severe cases, drying the canal as well as possible after each irrigation, and placing a pledget of sterile absorbent cotton, rolled to the shape of a cone, into the external portion of the canal. The skin about the canal should be kept clean to avoid irritation from the discharge.

The use of antiseptics in the external canal, such as anilin dyes, mercurochrome, argyrol, etc. are of questionable value in clearing up the infection in the middle ear.

It is important to avoid chilling of the affected ear, as this tends to increase the congestion in the tympanum and mastoid antrum and thus retards the drainage. In children it is well to use a light hood with a pad of cotton over the discharging ear at night. If there is considerable fever and prostration, confinement to bed is advisable, and general supportive measures should be employed in all cases. Attention to acute infections of the nose and throat will usually have a favorable influence upon the progress of the infection in the ear.

Some authorities, notably Turner and Edinburgh, advocate the removal of adenoids in children at the same time the paracentesis is performed. Undoubtedly it is desirable to secure good ventilation of the eustachian tubes, but it is questionable if one is justified in performing an adenoid operation in the presence of an acute infection in the nasopharynx. In cases where the infection in the ear continues after the acute condition of the nose and throat has subsided, and particularly when the aural discharge tends to become chronic, with no symptoms of surgical mastoiditis, the adenoids should be removed and in most cases also the tonsils. Intranasal pathology, such as sinus infections and nasal obstructions, if present, should be given attention in these cases. Some authorities advocate the use of autogenous vaccines in cases which are subacute and tend to become chronic.

Perhaps the most important and the most difficult question to decide is the indications for opening the mastoid. Unquestionably, a considerable number of mastoid operations are performed unnecessarily. It is not uncommon to see patients who have had pain in the ear for two or three days or less, with marked tenderness over the mastoid antrum, and sometimes over the tip of the mastoid as well, and at times with considerable periosteal thickening over the mastoid process. This early tenderness is what Alexander of Vienna has termed "mastoidism." The temperature may range from 100° to 101° in the adult to 103° or 104° in the young child. There may be considerable prostration, and in the young very often symptoms of meningeal irritation due to the extension of the inflammation through the ununited sutures in the roof of the attic. These are not indications for a mastoid operation but for an adequate paracentesis. The great majority of these cases will clear up if free drainage is established through the ear drum.

It is probable that every case of severe infection of the tympanum is accompanied by infection of the mastoid antrum, and probably also by an extension of the inflammatory process into the mastoid cells. If the external cortex is thin, there is likely to be early tenderness of the periosteum over the mastoid bone. Often there is very little discharge during the first twelve to twenty-four hours after paracentesis, and little improvement in the patient's condition. Usually by the second day, however, a free flow of seropurulent material has begun; the pain in the ear is considerably less; the temperature is lower; and there is a noticeable improvement in the general condition of the patient. In cases with severe symptoms, if improvement is not manifest within three or four days after paracentesis, operation of the mastoid should be seriously considered. Particularly in the case of infants with severe toxic symptoms from an acute aural infection external drainage of the mastoid antrum should not be delayed, if there is not prompt improvement in the patient's condition after adequate paracentesis.

According to Politzer, the size of the tympanic antrum in the new born infant is actually greater than in the adult; hence, there is a considerable surface for absorption of toxic products from this cavity. You are no doubt familiar with the reports of Dean, Marriot, Lierle, and many others working the field of pediatrics, in which they have shown that an acute infection of the mastoid antrum in infants very often produces severe toxic symptoms, amounting in some cases to the cholera morbus syndrome. They have found that most of these cases can be saved by prompt drainage of the infected mastoid.

In cases with no severe toxic symptoms and no evidence of extension to the intracranial structures or sigmoid sinus or involvement of the facial nerve, expectant treatment should be followed, maintaining free drainage through the external auditory canal. This type of treatment can be continued five or six weeks, if there are signs of gradual improvement. It is usually unwise to allow a discharging ear to continue longer than six weeks on account of the danger of impairment of the hearing. In these cases with free drainage from the antrum and mastoid cells through the tympanum there is little danger of an extension of the infective process to the meninges or sinus within the first two or three weeks. However, if the infection has been present a week or ten days before drainage is established, there is much more likelihood of an extension beyond the mastoid cells.

A factor of great importance in this connection, is the type of organism present. The streptococcus mucosus capsulatus and pneumococcus are very prone to insidiously destroy the thin plates of bone separating the mastoid cells from the cranial cavity and sigmoid sinus. The streptococcus hemolyticus also often extends beyond the confines of the mastoid, but in so doing usually sets up severe toxic symptoms. The streptococcus pyogenes, which is the most common type of organism found in the middle ear and mastoid, is less apt to erode the bone. It is an advantage to have a bacteriologic study of the case from smears and cultures taken at the time the paracentesis is done.

In all severe cases both the white and red count and the hemoglobin estimation should be taken. A white count of 20,000 or over with a high percentage of polymorphonuclears usually indicates something more than a simple mastoiditis. On the other hand, particularly with a hemolytic streptococcus infection, a low white with a rapidly decreasing red count and hemoglobin percentage is usually an indication of rapid extension of the infective process. Radiographs of the mastoids, except in infants, are of considerable help in determining the extension of the infective process and, of more importance, in determining the presence or absence of destructive processes in the bony walls of the cells.

Pain is usually an important symptom. Other signs being equal, if pain deep in the ear does not subside soon after paracentesis, or if it recurrs later, mastoid operation should be advised earlier than when pain is absent. If the pain is referred upward from the ear toward the vertex or backward toward the occiput, it is likely to indicate a deep extension of the infective process. Tenderness and swelling over the mastoid process, if occurring late, is definite evidence of extension of the infection through the external cortex. Swelling superior and anterior to the auricle usually means the involvement of cells in the base of the zygoma. The absence of these signs, however, in the presence of positive symptoms of extensive infection in the mastoid, such as continued pain, fever, leucocytosis, purulent discharge and congestion and sagging of the tympanum and posterior superior wall the external meatus, is usually of more serious importance, because it indicates an infection of the mastoid cells confined under a thick external cortex, and this condition favors a deep extension of the infective process.

In cases of acute purulent otitis media, in which there are no serious complications and in which one has no definite reason to suspect an early development of such complications, it is usually best to treat conservatively for at least ten or twelve days. In fact, patients usually do better postoperatively, if they can be given a little time after the onset in which to build up an immunity toward the infection. If after that length of time there should be no signs of improvement, such as a definite lowering of the temperature and lessening of the congestion about the ear drum, one should advise mastoidectomy. At this period a profuse discharge is not in itself an indication for mastoid operation, if the other symptoms are subsiding.

At times all of the symptoms may subside temporarily in a condition that is really surgical. For example, in the case of a child who gave a history of vague discomfort in the ear over a period of two weeks before paracentesis was performed, the temperature returned to normal, the congestion about the ear drum subsided, and the discharge had almost stopped on the tenth day after discharge was established; but two days later all the symptoms returned with increased intensity and mastoidectomy revealed an extensive coalescent infective process. Another case of an adult who exhibited all the symptoms of extension of the infection through the wall of the sigmoid sinus seven days after the onset, and in which radiographs indicated destruction of bone about the wall of the sinus, recovered without mastoid operation. Every case of acute purulent otitis media is a potential surgical mastoid, and should be watched carefully and a guarded prognosis given until it is well on the road to recovery.

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STATUS OF THERAPEUTICS OF IRRADIATED ERGOSTEROL. Alfred Hess, J. M. Lewis and Helen Rivkin, New York (*Journal A. M. A.*, Aug. 31, 1929), assert that further clinical experience with preparations of irradiated ergosterol has shown that it is a specific for rickets, tetany and osteomalacia. As yet it has not been proved to be of definite value in other clinical conditions. In the course of the past year, a standard dosage has been established for the prevention and for the cure of rickets. Premature and exceptionally rapid-growing infants must be regarded as a separate group and dosage gaged according to a different scale. The basis of this standardization is a biologic estimation of antirachitic potency rather than a gravimetric assay of the irradiated ergosterol. It has been found that, if the prescribed dosage is observed, neither toxic symptoms nor hypercalcemia need be feared. The phenomena seem to be entirely or almost entirely due to an excess of antirachitic action. Hypercalcemia can also be induced experimentally by giving undue amounts of cod liver oil. Irradiated milk, especially dried milk, is likewise a valuable product in combating rickets and tetany, more especially in their prevention.

HEMATEMESIS *

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Hemorrhage from the upper gastrointestinal tract, with subsequent hematemesis, is sufficiently common, alarming to all concerned, and sometimes puzzling to the attending physician to justify a brief resume of the most important known causes and the more accepted methods of dealing with them. Rarely does death occur from oozing from the mucous membrane, but it does frequently follow, when a larger vessel is actively bleeding. Numerous other sources of hemorrhage must be differentiated from those of the esophagus, stomach and duodenum. Blood coming from the mouth may be from the nose or throat, and an examination may reveal its source. Blood may be from the lung, and may or may not have been swallowed. A physical examination of the chest with a history of chest disease will aid us in differentiating. Figure 1 shows some of the helpful points in differential diagnosis.

Hematemesis	*Hemoptysis*
Dark red, grandular, "coffee ground."	Bright red, mixed with sputum.
Mixed with food.	No food.
Acid in reaction.	Alkaline.
Frequently clotted.	Usually frothy, at times clotted.
History of nosebleed.	History of cough, preceding or following.
History of gastric disturbance.	Usually none.
History of heart disturbance.	Signs of lung consolidation.
Tarry stools.	No tarry stools, unless blood has been swallowed.

Fig. 1.

One must also remember that large hemorrhage in the stomach may not necessarily produce vomiting. Most of the causes of hemorrhage are known, although some of them in a rather vague manner. I have grouped the causes under intrinsic and extrinsic causes, which is a slight modification of Balfour's classification of intragastric and extragastric causes. Figure 2 shows the intrinsic and fig. 3 the extrinsic causes.

Intrinsic Causes

Peptic ulcer.
Cancer.
Syphilis.
Tuberculosis (rare).
Hemorrhagic erosions.
Gastritis.
Caustics or acids.

Benign tumors
  a. Polypi.
  b. Angioma.
  c. Fibroma.
Linitis plastica.
Injuries from foreign bodies.
Operations on stomach and duodenum.

Fig. 2.

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* Read before King County Medical Society, Seattle, Wash., April 15, 1929.

Extrinsic Causes

Liver disease.
Obstruction to bile duct.
Disease of the spleen.
Disease of the gallbladder.
Disease of the appendix.
Disease of the pancreas.
Cardiac disease.
Nephritis.
Typhoid fever.
Yellow fever.
Scarlet fever.
Trauma.
Abdominal operations.

Fig. 3.

A history of trauma to the esophagus by a tube or other rough article may be an important diagnostic point. Esophageal bleeding from varices, a history of splenic or hepatic disease and where the patient is alcoholic, with no previous history of gastric pain, will help to rule out cancer or ulcer. Bleeding from varices, when due to portal obstruction or cirrhosis, is sudden, large in amount and without the least history pointing to gastric disturbance. It must be remembered there have been so-called silent ulcers, but I am of the opinion that it is more likely the case of a silent patient who has not been impressed by the usual ulcer symptoms. If varices are the result of stasis due to cardiac insufficiency, symptoms and signs of that condition should be evident.

It may be said that the four most common causes of hemorrhage sufficient to cause hematemesis are duodenal ulcer, gastric ulcer, cancer and a group of toxic or embolic conditions, under which would come some of those severe hemorrhages, in which at the operating table no break in the gastric or duodenal mucosa can be found and a diseased gallbladder or appendix, or both, are removed with the complete cure of the patient.

Cabot lists 750 cases of hemorrhage and the causes, as grouped in figure 4.

Cabot's Classification

About 750 cases at the Massachusetts General Hospital up to 1920, listed in order of frequency.

1. Peptic ulcer	261 cases
2. Gastric cancer	233 cases
3. Cirrhosis of liver	135 cases
4. Unknown or toxic causes	88 cases
5. Splenic anemia	22 cases
6. Alcoholic gastritis	11 cases

Fig. 4.

Of peptic ulcer, 10 to 25 per cent cause hemorrhage, although some authorities claim as high as 50 per cent. Gastric cancer is rarely associated with vomiting of pure blood, but there are usually blood and food which have accumulated in an obstructed stomach, have been acted on by the digestive juices and the vomited material, therefore, resembles coffee grounds.

Gastric hemorrhage out of a clear sky, without previous history of stomach trouble, usually means cirrhosis of the liver. This condition, however, has now changed from being one of the most common causes to one of the least, for it is a fact that twenty years ago alcoholic cirrhosis of the liver was very common. Many cases in each community were to be found where now they are rather rare.

The toxic causes may include infected gallbladder and appendix.

Dieulafoy first reported a case of rather severe and repeated hematemesis in 1903 which was entirely cured by the removal of a diseased appendix. It is now commonly known that diseased gallbladder and appendix have been the cause of many gastric and duodenal hemorrhages. Graham, in his recent book, shows a plate of an experimental dog's exposed abdominal content, where a dye, injected so as to gain access to the lymphatic system of either the gallbladder, appendix, duodenum or pancreas, will travel to the region of either one of the respective organs, showing somewhat graphically the possibility, for instance, of toxic material traveling from the gallbladder which is diseased to other organs and consequently setting up new lesions there. Many of the unknown causes may on further investigation prove to be splenic disease, anemias, leukemia, hemophilia, scurvy, purpura, tropical fever, such as yellow fever.

Balfour states that gastric ulcer is the most common cause of gastric hemorrhage, and I should say that peptic ulcer is the most common cause of all hemorrhages in the upper gastrointestinal tract. Statistics vary, yet it is stated that from 10 to 50 per cent of ulcers bleed profusely. The bleeding varies greatly in duration and quantity. One may be fatal, many are not. Operation has been done for a supposed bleeding ulcer where none has been found, in spite of a fairly good history. There are two possibilities; first, that the ulcer was there and not found; second, that there was no break in the mucous membrane at all or not sufficiently large to be seen with the eye. A clear history with positive roentgen findings is the last word in the diagnosis of ulcer. However, in the matter of a roentgen examination, it should not be advised until after the hemorrhage has completely subsided.

The immediate treatment, therefore, in any case of hemorrhage of the gastrointestinal tract should be one that is sufficiently conservative to allow time to diagnose the case and prepare the patient for such treatment as may be later indicated. The immediate treatment consists of, first, rest in bed; second, morphine; third, the occasional use of ice-bags and of any substance which has proven valuable in increasing coagulability of blood, such as intravenous calcium chloride, 10 per cent solution, 5 cc. daily for three days, or the use of some of the serums for that purpose.

Intravenous glucose or saline, or transfusion should never be used until the hemorrhage has been effectively controlled. The very essence of the conservative treatment has for its main principle the cessation of hemorrhage because of lower blood pressure giving a better opportunity for coagulation at site of bleeding and any measure likely to defeat that principle would be disastrous. Transfusion, not over 500 cc., may with care be considered just previous to an operation.

It takes more courage to treat hemorrhage conservatively than by some active method because the inclination in time of stress is to do something radical. After hemorrhage has been controlled and the diagnosis made, one can only treat the responsible disease. If the cause is found to be a bleeding ulcer, where a large vessel is eroded and the hemorrhage continuous for several days or recurs in two or three days, one may be justified in giving a transfusion and operating at once. These cases are rare.

The rule is, *do not operate during hemorrhage,* because the patient is usually in poor condition; emergency does not permit of a differential diagnosis; recovery under the conservative management is the rule.

If surgery is the subsequent treatment of choice, get the patient in operative condition. Then at a favorable time one is justified in attacking an offending ulcer, appendix, gallbladder or spleen. All bleeding ulcers or those that have bled should be removed if possible. Those that have bled previous to a gastroenterostomy, will in a large percentage bleed thereafter. In the case of a duodenal ulcer, the Finney pyloroplasty or some such method is efficient, in that the operation at once exposes the ulcer area to attack and the closing plastic operation accomplishes what is desired in these cases, namely, more rapid emptying of the stomach and ample opportunity for alkaline duodenal regurgitation.

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PRIMARY INGUINAL HERNIA WITH STRANGULATION

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Primary inguinal hernia with immediate strangulation is a rare occurrence. A search of the literature reveals much data on strangulated hernias of all types, including that of foramen of Winslow, diaphragm, mesenteric, umbilical, femoral, inguinal, etc., but we fail to find mention of a single case, where the primary inguinal hernia was accompanied by immediate strangulation except possibly in infants.

Strangulation of hernias in infants is quite common and frequently produced by crying spells or whooping cough so severe as to cause ballooning of the peritoneum through the inguinal ring, carrying with it a loop of intestine. These cases may be reduced by gentle pressure, hot applications or a whiff of ether. A few, however, require surgical reduction.

We had a case of infant hernia with immediate strangulation in a baby three months old. The strangulation was reduced with difficulty the first time under anesthetic. It recurred from time to time until finally reduction was impossible, due to the fact that sixteen hours elapsed from time of onset of last attack. Fecal vomiting was present and the baby was sent to the surgery for immediate operation. The bowel in this case was blue in color, but survived after hot towels. The baby experienced a permanent result but it kept a nurse busy constantly to prevent the child from tearing the bandages off or saturating them with urine.

A great many cases of infant hernias are recorded in the literature that have gone to the surgery for reduction but no mention is made in the original finding as to whether the strangulation was permanent.

The case mentioned in this paper is almost an adult and has to us some points of unusual interest.

Mr. R. G., aged 15 years and weighing about 130 pounds, had been employed in a berry patch for several days carrying berry crates. On July 27, while carrying crates weighing about 30 pounds he was suddenly seized with a severe pain in his right groin which felt as though something was tearing loose. He immediately experienced a great difficulty in walking and a numbness in his right leg, accompanied by a desire to faint. He was helped to the house, where an examination revealed a swelling in the right groin the size of an egg, very painful to touch.

Reduction by gentle pressure was a failure and the patient was subsequently brought to the office. Examination revealed the patient in great pain and unable to walk or stand erect. He was pale and complained of a constant desire to vomit. Gentle pressure and hot compresses again failed to reduce the swelling and he was taken to the hospital and operated upon, four hours elapsing since the original onset of symptoms.

Operation revealed an indirect inguinal hernia, containing about six inches of the small intestine. The sac was not the usual organized sac with a thick wall, but was composed of thin peritoneum and connective tissue normally found in this region, the total mass being roughly the size of an egg. The sac was surrounded by considerable edema and when opened expelled a bloody serum. The bowel was bluish in color but not black, and still failed to reduce back to the peritoneal cavity. The ring with strangulated contents was less than two centimeters in diameter and had to be enlarged with the scissors before the bowel could be slid back into the cavity. Hot compresses brought back the circulation to normal. The ring was repaired in the usual manner with the Bassini method of interrupted sutures and transplantation of the cord.

In reviewing this case let me state that both the patient and the boy's father are positive there has been no previous evidence of distress or swelling in the groin prior to the present incident. The surgical findings of an unorganized sac, surrounded by edema and containing a bloody serum, would point quite conclusively to a primary hernia with immediate strangulation.

The State Accident Commission, when consulted regarding the merits of this case, declined for the present to accept any responsibility, stating that such a situation is impossible without prior evidence of preexisting hernia and that in their records there is no incident of award for primary strangulated hernia.

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MANIPULATION METHOD OF TREATMENT FOR RECALCITRANT AND NEBLECTED CLUBFOOT. The technic of the method described by E. D. W. Hauser, Chicago (*Journal A. M. A.*, Aug. 31, 1929), is founded on fundamental principles of treatment based on an analysis of the anatomic and physiologic changes present in a clubfoot. The apparatus required consists of a special foot board, a strong semielastic band, and a simple cylindric bar. The manipulation is carried out under light anesthesia. Essentially the method is the same as that which has been employed at the Carolina Institute under Professor Haglund for many years. Modifications of technic have been adapted to suit a difference in conditions, and some improvements have been introduced. The use of the method has been further developed to precede the triple arthrodesis operation.

OUR STATE ORGANIZATIONS*

MR. J. G. CROWNHART,
MADISON, WIS.
Secretary State Medical Society of Wisconsin

An address by the President of the State Medical Society of Wisconsin delivered in 1871, some fifty-eight years ago, declared that the medical profession was then in a period of transition. What was true fifty-eight years ago is still true today, for progression always means a constant winnowing to take advantage of that which is new and trustworthy to displace that which is of a lesser beneficence.

Today, however, people in all walks of life find themselves in more complex situations; they must judge values on scales that have become more difficult to read. While the pioneer satisfied his own immediate needs in his own crude but generally adequate ways, today a thousand contribute to alleviate the needs of each of us. We appreciate and demand finer workmanship. We are content that others should supply us until we have even come to a time when we rely upon tickets to secure our amusements.

It is only natural that in such a continued period of change the problems of the doctor have graduated in part to problems of the entire profession. The thoughtful physician knows that, while there are many things he can do for himself, there are still other and larger aims that are of a joint interest to the profession, and he must lend his support to the group who can accomplish for all that which cannot longer be secured by individual effort. There are no dividends from jealousies and bickerings; no dividends without investments; no achievements except by the combined efforts of all to whom benefits must ultimately flow.

So have your state organizations developed tremendously to meet new group needs and to anticipate the problems of the present and the future. While I shall not dwell on the progress of scientific medicine, no person who thinks of state societies should forget that they exist primarily to elevate the standards of scientific medicine as practiced by every member. This is at once the oldest purpose for medical organization and the foremost today, and in the future, if state societies are to fulfill the conception of their founders. And, may I add, as this is done, so will many seemingly separate and distinct problems fade into obscurity.

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*Read before the Thirty-seventh Annual Meeting of Idaho State Medical Association, Lewiston, Ida., July 5-6, 1929.

While state organizations also exist to guard and foster the material interests of the members, they are not and must not become the means of transforming the ideals of a profession into commercialism. Indeed, state organizations have repeatedly declared against any such process from either within or without the profession. As Chief Justice Dixon of the Wisconsin Supreme Court so ably said many years ago, "It is possible to hold the disc of the dollar so close to our eyes that it excludes from our sight every object of public interest and blinds us to every sentiment of humanity."

Just as there are fads in medicine, so may there be extremes in the practices of a state organization. Against these we must be constantly watchful unless we should fail to secure the very ends for which we have grouped together. Between these extremes, however, there exists a safe common ground, in which all state societies may accomplish a useful endeavor that will spell progress to both the public and the profession. It is of efforts and achievements in this field that I speak tonight.

In 1860, in a little town in southern Wisconsin, a man by the name of Appleby, using a cherry limb, invented a twine knotter for the then imperfect grain binder. The Civil War came on, and before Appleby could make his little discovery generally known several years had passed. Yet men tell us that, had this invention become of common knowledge before the war, it would have released thousands of men from the fields and made possible and entirely probable a shortening of that great conflict of at least a year if not two.

I tell you this little story to illustrate the statement that generally the knowledge acquired by an individual is not of value unless it may find an application. A scientist may discover insulin for diabetes but the real value in the discovery lies in the fact that all physicians are advised of its application and all people are told of this great new weapon against a particular disease that now lies in the hand of every family physician. It is not possible for the family physician to disseminate such news except to a limited number, but a state organization may weekly reach thousands upon thousands of readers of the daily and weekly press of its state, carrying to them that which is old to the doctor but vital news to the great nonmedical public.

An individual physician may seek a postgraduate course, but only the county and state societies through meetings and extension effort may take to the man on the frontier, if you will, those who can apprise them of advances in science which serve to inspire to a better service, which find a practical application in their day by day efforts. Again we have a field of effort in which organization may accomplish that for the member which the average member could not well do for himself.

In the field of legislation I have heard it said so frequently, "let the people have what they want." But no people can decide their needs without knowledge. Your member of the legislature and in Congress desires to render an honest service, not only to those in his own district but to all people. On the other hand, he finds himself called upon daily to vote on measures that deal with subjects, of which he knows but a smattering. Serving for a generally inadequate compensation, he must maintain in some way his private life and yet attend committee meetings, answer thousands of letters, watch his own measures and try to post himself on other important pieces of legislation. To help him he finds six lobbyists for every member of the legislative body if not many more. The lobbyist may be there with funds at his command to jam through the legislation in which he is interested, or he may be present to give accurate information on a technical subject which will better enable each member understandingly to decide for himself what should be done.

Here is a proper field for the state organization. The phrase, "in the interest of public health," has a great appeal but may cloak a multitude of sins. I have never yet heard a quack present his arguments that he did not begin and end an emotional and prejudicial appeal with that phrase. Community health is really the sum total of the health of the individuals that make up the community. What will promote the health of the majority of the individuals of any community is as technical and scientific a subject as was ever presented to any legislative group. A state medical society may very properly urge as a group, through its officers and family physicians, considered proposals which will accomplish a very high service worthy of a great profession. It may, through its officers and individual members, point out the fallacies that lie behind much which is sincerely offered but ill considered. It should never hesitate to do so on proposals which are conceived in purely selfish motives, aimed to secure results that benefit the few at the expense of the many.

If this service be not rendered through a state society it becomes ineffective, for not one nor ten members must be informed but all legislators must have the information. If that be not accomplished, then a small group working for selfish ends may well simulate to the majority of the members a great public interest in their measure that does not exist; a small group may well twist a scientific subject so that it bears no relation to the scientific truths that are known to you but not to the layman.

Many times have I seen measures drafted to accomplish a laudable purpose in which the proponents had no thought of affecting the medical profession. Yet in those measures most important points to the continued success of a proper health program were at stake. Here only through your state organization may the identical interests of the public and physician jointly be protected. And in this directive field of effort your society may achieve its greatest service and yet it may be realized by but ten members in five hundred.

I have spoken of the extension of scientific knowledge to members and public alike as a function of a state society; I have touched briefly on legislation. Passing over other services, both numerous and valuable, I shall devote my remaining time to another field of endeaver, in which only the organization can cope with the problems that affect every member.

"State medicine" is a term which has been used at one time or another to embrace all that is abhorrent to the physician who has the welfare of his patients and of the public at heart. May I suggest that too frequently has this term been used and a variety of discussion ensued which missed the real mark. We are now prone to shoot in the direction of our predecessors instead of finding the real target.

Just as the profession has made great strides in the past and is making equally great progress in the present, so has there been awakened a new social conscience as respects public health. The employer of labor knows what "time off" because of illness costs him. The legislator knows what "state charges" means in terms of increased taxation. The member of the school board knows what it costs to have teachers ill. The parent knows what it means to have the child contract a contagious or communicable disease. The executive knows what it means when a preventable disease deprives him of the services, even temporarily, of his right hand men and assistants. The men in the shop or the mine know full well what it means when hospital bills must be paid.

Now all are well on the way to a realization that some of this tremendous burden need not be met, if they adopt preventive measures which are already available to them. So we see the physician of the industry, the preschool age round-up, the public desire to accomplish something better for the handicapped, and the legislative desire to hold down the costs of public care. And withal has come the final understanding that "millions for pills but not a cent for prevention" has been a poor national motto.

Great foundations have been established by laymen and frequently managed by them to conduct experiments in public health methods; larger and larger appropriations are being voted to health departments, local, state and national; more and more individuals are promoting ways to secure immediate results. I need not tell you that immediate beneficial results are sometimes costly. It is, indeed, an easy matter to look so hard for something which can be applied now, that the cost for the future, lying just around the corner, may never be seen, much less estimated. Mr. Gilbert Seldes has well said, "direct action without direct thinking is apt to be disastrous."

Physicians will thrive on the good health of their patients just as well, if not better, than they do on poor health. And their work will be more pleasant and give more satisfaction. The aim of the physician and of all those I have mentioned and more that make up what we are pleased to call the public is not divergent. The end desired is identical. But the question is how are we going to arrive at that end?

We must not be like Mr. Pecksniff, of whom Dickens says that he was a very moral man but like a signpost he always pointed the way for others to go, yet never went there himself. Nor must we go there ourselves without carrying the public with us. To do either will be fatal to the real result desired.

So, as I started this address, may I end it. That even as in 1871 we are in a period of transition. That the public attitude towards physicians is changing no one can deny. That you have a vastly increased confidence of the public is my firm belief. But that a further transformation is coming which must either be led by the physician or the layman is the point I wish to make.

In your state organizations there has been developed the excellent beginnings of medical statesmanship. To go forward with intelligent leadership must be the great objective of the future. Just as we must not condemn the legislator for his vote when we give him no information on which to base a choice between quackery and science, so must we not waste time condemning the public for taking by-paths that will lead them again to a maze from which they have just emerged, if we do not step into the van and guide them.

Herein lies your opportunity. This may be done in part by individuals, but if it is to be done as you would wish it to be done, it will be by your Idaho State Medical Association, the Wisconsin society and other state organizations everywhere. We must meet to set forth in terms so plain that the layman can understand that which we know to be true. We must point out the hazards in going too far or in going too fast. We must call into conference leaders in all walks in life and enlist their cooperating aid on the basis of mutual understanding. And, as we advance and develop that medical statesmanship for the benefit of the public, so will these benefits redound to every member of our societies and accomplish for all that which no *one* could do for himself.

CONGRESS OF AMERICAN COLLEGE OF SURGEONS

The American College of Surgeons will hold its nineteenth annual Clinical Congress in Chicago, October 14-18. Headquarters will be at the Stevens Hotel. An intensive program is being planned to make this home-coming event the greatest in the history of the College. The Hospital Standardization Conference will consist of morning and afternoon sessions on Monday to Thursday inclusive. There will be a series of clinical demonstrations given by George W. Crile, Cleveland; John B. Deaver, Philadelphia; John M. T. Finney, Baltimore; Charles H. Mayo, Rochester and others. Monday evening's program will include an address of welcome by the Chairman of the Chicago Committee on Arrangements, Dr. Herman L. Kretschmer; the address of the retiring president, Dr. Franklin H. Martin, Chicago; the inaugural address of the new president, Major-General Merritte W. Ireland, Washington, D. C.; and the John B. Murphy Oration in Surgery by Professor D. P. D. Wilkie of Edinburgh. Among the foreign visitors will be Dr. James Heyman of Stockholm, Dr. Thierry de Martel of Paris, Visconte Aguilar of Madrid, and Mr. Herbert Tilley of London. Tuesday, Wednesday and Thursday evening sessions will consist of scientific papers presented by surgeons from the United States, Canada and from abroad.

The Annual Convocation of the College will be held on Friday evening. The Fellowship Address will be delivered by Dr. Glenn Frank, president of the University of Wisconsin. The annual meeting of the Governors and Fellows will be held Thursday afternoon, followed by a symposium on cancer and bone sarcoma. An all day session on traumatic surgery will be held on Friday, in which leaders in industry, labor, indemnity organizations and the medical profession will participate. A special program has been arranged that will be of interest to those whose practice is limited to surgery of the eye, ear, nose and throat. A feature of the Congress will be the showing of surgical films that have been produced under the supervision and approved by the Board of Medical Motion Pictures of the College. New developments in color photography will be demonstrated. In addition to the commercial exhibits, there will be scientific exhibits by the departments of the College. A rate of one and one-half the regular one way fare has been granted on railroads of the United States and Canada to those holding convention certificates.

Chemical Obliteration of Varicose Veins. Howard M. Kern and Lewis W. Angle, Baltimore (*Journal A. M. A.*, Aug. 24, 1929), report on the treatment of 104 cases of varicose veins and 148 legs. The majority of patients had varicose veins on the leg and thigh. There were 651 injections given, varying in individual cases from two to twenty-seven. Two patients had been previously operated on; nineteen cases were complicated by ulcer, and six cases were complicated by eczema. Three patients had superficial ulcerations following the use of 20 to 30 per cent sodium chloride solution. These were not due to faulty injections but to subsequent leakage from the puncture wounds in spite of the fact that careful and prolonged pressure was made over the site. In three cases there was an ascending chemical phlebitis following the injections of salt solution. There was one recurrence after six weeks. There has been no case of infection or embolism. In no case was there failure to obliterate the injected veins. However, two patients with tremendous dilatation of the internal saphenous vein required twenty-five and twenty-seven injections, respectively, and in one very resistant case treatment is not yet completed. The ulcers have healed as if by magic except in two instances, in which there had been a recurrence of ulcer formation for fifteen years and the tissues of the leg had undergone such trophic changes that healing was almost impossible except by radical excision and grafting. Although these ulcers have not healed, they have been greatly reduced in size. None of the patients lost time from work. The authors are convinced that the injection treatment is the method of choice as opposed to operative treatment, both from the standpoint of danger and also from the standpoint of time lost. There are four contraindications to this treatment: (a) active or latent phlebitis; (b) obstruction to the deep veins; (c) arterial disease of the extremities (Raynaud's disease and thrombo-angiitis), and (4) cardiac disease. Pregnancy, in itself, is not a contraindication, but as the varices are greatly improved after delivery, Kern and Angle believe it is best to wait. A mixture of 50 per cent dextrose and 30 per cent sodium chloride is an ideal solution to use for obliterating the veins. Injections should be made in the horizontal position, if possible. If the internal saphenous vein is varicosed above the knee as well as below, it should be obliterated as high as is necessary to insure a cure of the varices of the leg. There is little or no danger in the treatment if it is done by careful operators with a thorough understanding of vascular conditions.

NORTHWEST MEDICINE
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EDITORIAL

SUNSHINE VERSUS CLOUDINESS

For some time there has been a wide-spread belief that exposure of the body to rays of the sun would serve to check as well as have a curative effect on certain diseases. This view has been fostered by the publication in magazines and newspapers of articles elaborating this idea, based on certain elements of truth, often embelished by a vivid imagination. The active propaganda of manufacturers of apparatus has served further to instill into the minds of the public the sunshine theory, at the same time emphasizing the idea that "canned sunshine" can be substituted for nature's rays and be used according to the individual's whim for a great variety of human ailments. More recently these beliefs have been modified by the writings of men versed in the practice of heliotherapy, who have sounded warnings against indiscriminate employment of these measures. We are in receipt of a communication from Dr. Frank T. Woodbury, of New York, (Lt. Col. U. S. Army, retired) who has made a study of the sunshine question. He expresses the following views on sunshine and cloudiness, particularly as they apply to the more or less cloudy conditions of the Pacific Northwest.

"A great deal of pseudoscientific writing has been appearing in many journals which, while desiring to keep up with the procession, do not yet know what it is all about when it comes to the matter of radiant energy and phototherapy. Even the authorities have misled by their slovenly inattention to definitions and nomenclature, and to the substitution of the apparatus for the energy administered. When to the above we add the commercial blurbs concerning sunshine lamps and sunshine foods, the question arises as to whether we are not getting a little beyond sobriety and, like the New England farmer, 'shingling off into the fog.' So little of the solar radiation will keep us supplied with health preserving radiation, especially when combined with an adequate diet of the usual class of garden and farm comestibles, that all this hubbub 'about it and about' makes one a little inclined to jeer.

"One of the most important advances in regard to public health is the increasing popularity of the sun tan and the propaganda for sensible sanitary clothing for men. While it may be doubted that the pajama will become a popular form of business and social attire, yet undoubtedly some drastic modification of the present masculine mode will be evolved. This will permit of a better bodily heat regulation, which is at present much hampered and the unsuspected source of many ills, and allow of greater accessibility to the skin by solar radiant energy. We have learned that all the wave lengths of solar spectrum have vital significance. Therefore, thinner clothing need not be absolutely transparent to ultraviolet to be healthful.

"Manville[*] has been making a survey of the ultra-violet component of the sunshine in Portland, Ore., and he reminds us that a more sanitary form of clothing is advisable to compensate for the reduced amount of ultraviolet. It is interesting to contrast this work with that of Woodruff[†] who ascribed the evolution of the blonde white man, who cannot tan but blisters or freckles in the sun, as due to his continuous living in gloomy forests and the foggy atmosphere of a postglacial climate. He wrote an article in the *Seattle Post-Intelligencer* in 1904, extolling the cloudy rainy climate of the Northwest as the ideal home for the white race who cannot tan, and pointed out the contrasting low death rate there as compared with sunnier localities. We must make a distinction. The individual whose skin will not pigment is not a subject for indiscriminate exposure to actinic radiation and will do best in brumous localities, while he who can form a good coat of tan will do best in sunny climes with a minimum of clothing."

ADMINISTRATION OF THE BASIC SCIENCE LAW

Interest in the passage of basic science laws has become noticeable in various parts of the country during recent years. These laws have been administered for sufficient length of time in Connecticut, Wisconsin, Minnesota, Nebraska and Washington to enable one to arrive at some conclusions regarding their efficiency. Recently Arkansas has also joined the list of basic science states, its legislature having passed such a law. The purpose of this legislation is to place a check upon the increasing numbers of poorly educated and defectively equipped men and women who care for the health of the citizens of a given state. Therefore, laws of this kind have been advocated and enacted on the basis of being public health measures. Since all persons who propose to treat the sick are required to demonstrate their knowledge concerning certain basic subjects, recognized as essential for adequate knowledge of the human system, these requirements appeal to legislators and the average layman as equitable and reasonable. Therefore, it is possible to enact legislation based on such principles.

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[*] Manville, I. A.: The Ultraviolet Component of the Sunlight of Portland, Ore. Am. J. Dis. Child., Vol. 37. p. 973, May, 1929.

[†] Woodruff, Chas. E. Woodruff, M.D., Major M.C., U. S. Army: Effects of Tropical Light on White Men. Rebman Co., New York. 1905.

Recently Kelly* has discussed at length the arguments for and against the enactments of basic science laws. He does not believe such legislation satisfies the difficulty under consideration and is not in favor or it. His chief objection is that these laws recognize the existence of the different cults and help to legalize and establish them. He raises the question, what are basic sciences, and objects to those generally specified as not being sufficiently inclusive. He would reject all measures that produce any contact with the cults and would devote all energies toward extensive efforts to educate the public as to the necessity of demanding from all practitioners such educational qualifications as are required in the most complete modern medical education. Truly this would be a happy solution of the problem, were its attainment possible or practicable. Anyone who has had experience in educating the public on any advanced problem will realize the futility of attempting such a wholesale educational program in the face of prejudice and hostility against modern medicine and the activities and wide-spread support afforded all kinds of irregular methods of treating the sick. Since legislators enact laws regulating various forms of practice, efforts concentrated upon such bodies are more likely to produce tangible results. On the principle that half a loaf is better than none, why not be satisfied with legislative measures restricting to a minimum the personnel of the cults rather than rejecting the half in attempting to obtain the impossible whole loaf which would eliminate the objectionable cultists?

Results which have been obtained from the administration of the basic science law in Washington offer a striking illustration of what may be attained from this sort of legislation. Kelly considers the Washington law probably the worst that has ever been tried, since it specifies that examinations will apply to all persons applying for license or certificates for practicing medicine or surgery, osteopathy and surgery, chiropractic or drugless therapeutics, thus, as he states, not only recognizing cults but establishing a legal classification for them. One must not overlook the fact that these cults have been legalized by legislation and examining boards appointed for each of them by name. Such legislation was enacted during the war when the doctors of the state were serving in the army or navy and none had a voice in the legislative session when these laws were enacted. Ten years later the basic science law was passed, largely as the result of the activity of the public health league.

The following figures will be of interest, showing the results from the administration of this law. During 1925, following examinations before their respective boards, licenses were issued to 115 physicians, 55 chiropractors, 19 osteopaths, 10 drugless healers. During 1926 the figures were 113 physicians, 42 chiropractors, 35 osteopaths, 27 drugless healers. During 1927, before the basic science law became effective on June 1, the numbers were 47 physicians, 29 chiropractors, 38 osteopaths, and 17 drugless healers. At the first basic science examination in July, 25 physicians passed with no chiropractors, osteopaths or drugless healers. At the two examinations under this law in 1928 there were successful 101 physicians, 4 chiropractors, 9 osteopaths, no drugless healers. At the 1929 examinations 95 physicians passed with 5 failures, 9 chiropractors with 12 failures, 8 osteopaths with no failures. No drugless healers were successful and 4 failed.

These results indicate the restriction which may be expected in the numbers of irregular practitioners, where the basic science law functions. Already it has been announced that the existence of such laws has proved the greatest discouragement for the so-called schools of the cults. If they were universally adopted, it would doubtless become a great impetus toward the elimination of these half-baked institutions of learning, and would serve as an inspiration for those desiring knowledge of the healing art to acquire such education from high grade and well established scientific institutions.

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*Kelly, H. E.: Basic Science Statutes, J. A. M. A. 93; 519, Aug. 17, 1929.

THE YAKIMA MEETING

Although the attendance at the Washington Association meeting at Yakima was not equal to that of some other annual gatherings, yet the registration of about one hundred and seventy-five was representative of all parts of the state, thus indicating a widespread interest in this medical organization. As has become customary in recent years, the first day's session, at the Golf and Country Club, assigned to the ancient and popular game of golf, was a leading attraction and assembled many devotees. In fact, for some members of the association this has become the important feature of the annual program. The visiting players received a warm welcome from Yakima kindred spirits and, in spite of the afternoon's elevated temperature, the day's sport was universally pronounced a great success. The ensuing dinner, at which the awarding of prizes was the distinctive event, was an occasion of much good fellowship.

The scientific program of interesting papers attracted attentive audiences, accompanied by good discussions. The eastern guests, Drs. Bockus and Swalm of Philadelphia, presented papers on live topics that added materially to the value of the meeting, as they affect the daily work of all practitioners. The reports of the Public Health League, showing the results its work has accomplished during the past year, were convincing evidence of the importance of this organization in promoting the welfare of our citizens in many fields of endeavor. All in attendance were impressed with the necessity of supporting the officers of the league in the efficient work outlined for the future. Every member of the state association should belong to the Public Health League and thus do his share in attaining results that will not only benefit him personally but also will advance the interests of the medical profession and protect the public welfare.

The social features of the meeting were of a most pleasing character, the ladies being entertained at Mrs. Brush's afternoon tea and later at a bridge party and drive. The most noticeable social event was the lawn party and dinner dance for the members and their wives, given by Dr. and Mrs. John Kloeber at their home on their hundred and forty acre fruit ranch. The tables under the apple trees, the canvas on the lawn for dancers, music in the moonlight, supplanted by many colored electric lights made a mental impression that will not soon be forgotten. Next year the association will meet in Bellingham, with Dr. H. E. Cleveland of Burlington for president.

MEDICAL NOTES

OREGON

Eastern Oregon District Medical Society held its annual convention at Wallowa Lake August 16. Dr. John H. Fitzgibbon, of Portland, opened the morning session with an address on "Esophageal Stenosis," which was illustrated by motion pictures. Dr. L. B. Bouvy, of La Grande, discussed "The Relation of Nasal Sinus Disease to Bronchial Asthma." "The Increasing Frequency of Pulmonary Abscesses Following Postinfluenza and Postpneumonia Conditions" was the topic of a paper by Dr. E. A. Pierce, of Portland.

At the afternoon session Dr. H. T. Coffen, of Portland, spoke on "Progress in Cardiovascular Disease." Dr. R. W. Mattson, also of Portland, told of "Collapse Therapy in Pulmonary Tuberculosis." Dr. W. T. Phy, of Hot Lake, discussed "The Human Foot, Its Abuses and Their Corrections." Dr. J. G. Cheetham, of Portland, discussed "Clinical Phases of Renal Tuberculosis." The last speaker was Mr. C. C. Foley, of Portland, executive secretary of the Oregon State Medical Society, who discussed "The Business Side of Medical Practice."

The convention closed with a dinner dance at Wallowa Lake lodge. Officers elected for 1930 were: President, J. P. Brennan, of Pendleton; vice-president, Charles Palmer, La Grande; secretary-treasurer, Lewa Wilkes, La Grande. The next meeting will be held at Pendleton during the 1930 Roundup in that city.

Health Survey Proposed. Dr. Richard P. Dillehunt, dean of the University of Oregon Medical School, in a recent letter to the commissioners of Multnomah county, seeks their support for a proposed health survey of Portland and Multnomah county. The city and the medical school have indicated a willingness to contribute toward such an investigation, which will be similar to surveys made of large eastern cities under the auspices of the American Public Health Association.

Professional Building Opened. The new three story $90,000 Medical Arts building at Roseburg was opened August 1. Fifteen local physicians and dentists have taken space in the new structure.

Hospital Planned. Dr. J. C. Twitchell, of Portland, formerly coroner of Douglas county, has completed plans for the establishment of a modern clinic and hospital in the Perkins building at Roseburg. Articles of incorporation have been filed, preliminary to a sale of stock in the institution to the general public.

Railroad Surgeon Appointed. Dr. E. D. Johnson, of Klamath Falls, for many years district surgeon of the Southern Pacific Railway, has been appointed division surgeon of the territory between Sacramento, Calif. and Portland.

Health Officer Named. Dr. Herbert K. Kent, formerly of Minneapolis, Minn., has been appointed county health officer at Roseburg. He succeeds Dr. DeWalt Payne, who resigned in order to become head of the new Eastern Oregon Tuberculosis hospital.

Dr. J. C. Maxson has renewed practice at Myrtle Creek after an absence of several months.

To Study Abroad. Among those who have left recently to engage in postgraduate study abroad are Dr. Jesse Ettelson, of Portland, and Dr. A. J. McCannel, of Silverton.

Hospital at Veneta. Dr. C. N. Orcutt, of Veneta, has purchased the Ed Hunter home near that city and is having it converted into a modern hospital.

Dr. A. F. Kresse, of Medford, is recovering from a fractured ankle, which he sustained several weeks ago when he slipped on a rock while swimming.

Dr. Sidney Kay, a graduate of the University of Toronto and formerly engaged in practice at Rome, N. Y., has opened an office at Salem.

Dr. A. O. Pitman, who recently graduated from the University of Oregon Medical School, has located at Forest Grove.

WASHINGTON

Bond Issue for Sanatorium Proposed. Following a recent meeting of representatives from interested groups in Grays Harbor county with the county commissioners, it was determined to circulate petitions for a bond issue of $100,000 to be used in the construction of a new juvenile ward at the Oakhurst Sanatorium at Elma. This institution, which now cares for an average of sixty-five patients, is greatly overcrowded. Dr. Howard Hull is director.

Quarantine Station Ordered. As the result of the past winter's experience with epidemic meningitis brought to the ports of the Pacific Northwest by steerage passengers from the Orient, the attention of public health and quarantine officials has been called to the necessity of providing more adequate quarantine detention facilities in this region. Dr. L. D. Fricks, of Seattle, regional director of the United States public health service, is said to have recommended to Dr. Hugh Cummings, surgeon general of the public health service, the establishment of a new quarantine station at Seattle to replace the present one at Diamond Head.

Health Campaign Planned. Representatives of civic organizations in Bellingham recently held a meeting for the purpose of appointing a public health committee, the purpose of which is to carry out a campaign of public health education and to bring about the establishment of a full time city-county health officer.

Hospital to be Enlarged. Work is now under way on a five story addition to the Deaconess hospital at Spokane, which it is expected will be ready for occupancy in December.

Medical Building Incorporated. Articles of incorporation have been filed for the United Rhodes Realty Corporation which is soon to begin construction on a new twenty story medical arts tower at Tacoma. The site selected is on St. Helens Avenue near Ninth Street.

Pan-Pacific Surgical Congress. The meeting of this organization at Honolulu was attended by a number of men from Washington. Among them from Seattle were D. C. Hall, D. H. Palmer, H. E. Coe, A. H. Peacock, H. J. Davidson, O. F. Lamson, A. T. Wannamaker, A. B. Hepler. From Walla Walla were C. J. Johannesson and J. C. Lyman, also H. J. Whitacre from Tacoma. Several of these presented papers before the Congress.

Snohomish County Medical Society held a special meeting in the Medical-Dental Building at Everett July 26, at which motion picture films were shown, illustrating "Movements of the Alimentary Tract in Experimental Animals" and "Influence of Drugs on the Motion of the Intestinal Tract in Animals."

Physician Granted Retrial. Misconduct of the attorney for the plaintiff was assigned by Superior Judge W. C. Huneke of Spokane as the reason for ordering a new trial of the recent malpractice suit, in which Elsie Prather, of Spokane, was awarded damages of $12,500 against Dr. George C. Downs. The plaintiff alleged neglect in the treatment of a fractured leg.

Health Officer Appointed. Dr. George H. T. Sparling of Seattle, at one time health officer of King county, and more recently of Walla Walla county, has been appointed health officer of Clark county to succeed Dr. Ernest Prothro.

Drs. Frederick Bentley and Will Otto Bell of Seattle are among the eye specialists who recently sailed for Europe to attend a meeting of the International Ophthalmological Congress at Amsterdam, Holland. This is the first meeting of this organization since the war.

Elected President. Dr. Geo. W. Swift of Seattle was elected president of the Pan-Pacific Surgical Conference at its meeting held in Honolulu last month. It was voted to hold the meeting every three years at that city.

Dr. G. S. Peterkin of Seattle sailed for Europe last month to attend an international medical meeting at London. He will be absent about three months, also visiting other medical centers.

Dr. G. W. Hoxsey, of Leavenworth, is convalescing from a recent illness, during which he was confined to a Wenatchee hospital.

Dr. Arthur B. Chapman, of Colfax, has moved to Seattle, where he will engage in practice.

Dr. Arthur E. Burns, well known Seattle physician, is seriously ill at the Good Samaritan hospital at San Diego, Calif.

Dr. M. C. Barber, formerly of Medford, Ore., has located for practice at Steilacoom.

Dr. Norman Bellas, of Saskatoon, Canada, has joined Dr. John F. Barton in the practice of diseases of the eye, ear, nose and throat at Longview.

Dr. Lyle J. Bailey, of Salt Lake City, a graduate of the University of Iowa, has opened an office at Millwood, near Spokane.

Dr. Emmett Calhoun, of Hoquiam, has returned to practice after an absence of several months abroad.

IDAHO

Visiting Physicians Entertained. Drs. W. M. Winn and C. E. Eimer, prominent specialists of St. Louis, Mo., recently visited Big Creek mining district on a combined business and pleasure trip. While in McCall they were the guests of Dr. Don S. Numbers.

OBITUARIES

Dr. D. F. Rae, a retired physician who practised for many years at Moscow, Ida., died at his home in Glendale, Calif., Aug. 6, aged 72 years. He retired from practice in 1919 and moved to California.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

Diseases of the Liver, Gallbladder and Bile Ducts. By Sir Humphry Rolleston, Bart., K.C.B., M.D., Hon. D.Sc., D.C.L., LL.D. Regius Professor of Physics in the University of Cambridge, etc. And John William McNee, D.S.O., M.D., D.Sc., F.R.C.P. Cloth. Illustrated. Third Edition. 884 pp., $16.00. Macmillan & Co., Ltd., New York, Boston, Chicago, London. 1929.

For a quarter of a century Rolleston's monumental book has been the standard classic authority on diseases of the liver and biliary tracts and now it receives new life from the coauthorship of McNee, whose experimental researches on liver physiology and clinical work on jaundice, based on the newer tests of liver function, have given him a world wide reputation. His classification of jaundice into obstructive, hepatic (toxic and infective), and hemolytic is now generally accepted by all clinicians. He shows in this volume how we have a dissociated jaundice in the hemolytic form, for the bile salts are not increased pari passu with the bilirubin in the blood, and also that the renal threshold is altered in hemolytic jaundice because there is no bilirubia as in the obstructive form. As bile salts are formed in the liver, and there is no hindrance to their elimination by the liver in hemolytic jaundice, one would not expect them to accumulate in the blood.

Since 1886, when Minkowski and Naunyn apparently showed that no "overt jaundice" occurred in fowl in the absence of the liver after experimental hemolysis had been done, it has been always thought and taught that bile is formed in the liver. Whipple and Hooper in 1913 found that bile pigment did, however, accumulate in the blood of dogs when the liver was completely shut off from the circulation. McNee then affirmed from repeating the experiments of 1886 that it was probably destruction of endothelial cells in the liver that prevented the formation of bile.

In 1913 the test, originated by van den Berg and Schnapper, proved that there were two kinds of bile pigment in the blood in jaundice which threw further light on the subject besides supplying a very delicate quantitative test for the bilirubin in the blood. But beginning in 1921 Mann and his coworkers at the Mayo Clinic made the astonishing discovery, through their successful removal of the entire liver in dogs, that bile is not formed in any amount in the abdomen but is derived from the breaking down of hemoglobin in the reticuloendothelial cells of the bone marrow. It is true that some bile pigment is formed in the endothelial cells of the liver and spleen but of insignificant amount.

The whole chapter on jaundice in the light of these recent and revolutionary discoveries is particularly instructive and interesting. In common so-called catarrhal jaundice the authors state that the results of the van den Bergh test are very variable, as has been our experience, and that in the beginning the reaction is often immediate direct, due to obstructive jaundice, while later the biphasic reaction occurs, showing toxic and infective hepatitis. Indeed, the disease is probably due to an infection of both the liver ducts and cells, or a combination of cholangitis and hepatitis. It is extraordinarily difficult to exclude cancer in some of these cases, when they are prolonged and occur in middle age. The Lyon's treatment of duodenal drainage for diagnosis and treatment receives no recognition in this book.

Differential diagnosis is excellently described throughout the work, especially in the section on hypertrophic biliary cirrhosis, a very rare disorder. Neither is treatment neglected, although there is little new in this respect. The newer liver function tests and cholecystography are described in detail in the appendix. Altogether this book continues to be the supreme authority that it has so long been, and is invaluable alike for the physician and surgeon.

Winslow.

The Neuroses. By Israel S. Wechsler, M.D., Associate Professor of Clinical Neurology, Columbia University, New York City. Octavo of 330 pp. Philadelphia and London. Cloth $4.00 net. W. B. Saunders Company, 1929.

The opening or introductory chapter of this book is concerned with a resumé of the development of psychiatry as a specialty and the growth of the psychopathologic interpretation of the functional disorders of the nervous system. The chapter on mental mechanisms is an excellent presentation of what, according to the psyochoanalytic technic, are the "dynamics" of human thought or the reasons for mental reactions, conduct and behavior. However, the validity of much of this depends upon the acceptance of the theory of the unconscious. Unless this is done little insight can be had into the psychopothology of the neuroses. The same holds true with reference to the acceptance of the psychoanalytic idea. Concerning the etiology of the neuroses, the author considers constitutional predisposition together with developmental and environmental factors, considerations which do not always receive sufficient emphasis when physicians are engaged in diagnostic procedures.

In the chapter dealing with the treatment of the neuroses well defined requirements for the practice of psychoanalysis are laid down and are worthy of quotation. "In order to practice psychoanalysis one must be well trained and properly qualified. Some uninformed physicians and many other would-be therapists practice psychoanalysis and bring the art into disrepute, even if they do not harm the patients. A number of practitioners, honest and otherwise, read a little of the psychoanalytic literature, bandy a few of the more popular expressions, and think they can practice the art. But while many do, few are competent, and fewer are successful. The first and perhaps most important requisite for one who would devote himself to psychoanalysis is that he submit to a personal analysis, both for the purpose of acquiring technic and of solving, or at least gaining insight into whatever unconscious conflicts he may himself possess. The latter is of great practical importance because the analyst may unwittingly bring his own conflicts into those of the patient and thereby complicate if not bungle the whole treatment. While it is possible that an unusually well-adjusted person, gifted with acute insight into human motives, may be able to practice without preparatory character analysis, in general one cannot learn the technic from books, lectures or seminars alone. The next step is to master the theory of psychoanalysis and acquire a sound knowledge of the whole psychoanalytic literature."

According to the author, the cases which lend themselves best to treatment by psychoanalysis are those grouped under the transference neuroses, namely, anxiety hysteria, conversion hysteria, hysteric phobias and compulsion neuroses. He goes on to state the qualifications the patient should have in order that psychoanalysis might be undertaken, i.e., a certain amount of education and cultural background; he must want to get well from his neurosis; he must not be too old or too young, at least not too rigid in his ways and too set in his views; the accepted form of treatment takes a minimum of six months, generally a year or longer, and an hour daily, five days of every week; the patient must be prepared to make considerable sacrifice of time and money. It immediately must become apparent that the psychoanalytic technic has decided limitations and is only applicable to a very small number of the great army of neurotic individuals who frequent physicians' offices in quest of normal mental hygiene. The book ends in giving the Kuhlmann types of psychometric tests for children between the ages of three months and three years, after which the Stanford revision of the Binet-Simon tests are given in resumé form. These tests are an invaluable part in the complete study of behavior, especially in children, adolescents and young adults. ROHWER.

PRINCIPLES AND PRACTICE OF MINOR SURGERY. A Textbook for Students and Practitioners. By Edward Milton Foote, A.M., M.D., Visiting Surgeon, St. Joseph's Hospital; Consulting Surgeon, Randall's Island Hospitals and Schools, etc., and Edward Meakin Livingston, B.Sc., M.D., Assistant Visiting Surgeon, Bellevue Hospital; Instructor in Surgery, New York University and Bellevue Medical College, etc. Sixth Edition. 755 pp. 420 illustrations. Cloth, $10.00. D. Appleton & Company, New York and London, 1929.

The authors state, "No part of the body is exempt from accidents or new growths or inflammations. For this reason minor surgery can never become a specialty. It is a part of every specialty." Most of this kind of work will be done by the general practitioner, hence the style of elementary instruction which begins with the equipment for minor surgery, and includes a discussion of instruments, suture material, drains, dressings, etc. One chapter is devoted to kinds of sutures, the tying of knots, the principles of asepsis, with an outline of the proper methods for sterilization of materials used. Bandaging is also described, and the various applications are profusely illustrated. Even splints and plaster casts are taken up, with some information on the use of Carrel-Dakin treatment, wet and dry dressings and the use of paraffin wax. Following this is one of the most valuable sections of the book, that of anesthesia. Regional anesthesia, nerve block for various operations on the breast, toes, wrist, etc., are detailed, including a very helpful section on caudal block for operations about the anus. There is also a splendid outline of technic for such things as spinal puncture, paracentesis, skin grafting, etc.

The next part of the book is given over to the principles of diagnosis and treatment, and includes a clinical consideration of wounds, a study of inflammations, specific infections such as syphilis, tuberculosis, anthrax, glanders, etc., and a clinical consideration of neoplasm. Following this the authors take up the practice of minor surgery according to regions, beginning with injuries of the head and inflammations common to it, followed by lesions of other sections. Injuries and inflammations of the extremities receive the most detailed consideration which is in the most part excellently given. In brief, this book is a splendid reference work which is so systematically arranged as to make the information sought easily found. It can be highly recommended. GRAUMAN.

OSTEOMYELITIS AND COMPOUND FRACTURES. And Other Infected Wounds. Treatment by the Method of Drainage and Rest. By H. Winnett Orr, M. D.. F.A.C.S., Chief Surgeon of the Nebraska Orthopedic Hospital, Orthopedic Surgeon Lincoln General Hospital, etc. Illustrated. 208 pp. $5.00. The C. V. Mosby Co., St. Louis, 1929.

"Meddlesome surgery is poor surgery." "Let your patients get well if they can." The first of these quotations is from the great master, J. William White, for many years Professor of Surgery in the University of Pennsylvania, and it applied particularly to fractures. The second from John Ridlon, many years Professor of Orthopedic Surgery at Northwestern, was made with reference to fractures and osteomyelitis. The points made by these two illustrious men are strongly emphasized and stressed over and over again throughout this book. It teaches three most important points, about which we learned something in the great war, that of complete and prolonged rest, proper and complete immobilization, and adequate and thorough drainage.

In the opening chapter, "Sir Joseph Lister and Antiseptics," the impression is given that we have materially departed from the lessons taught by Lister and have not kept pace with surgical progress in general with reference to antisepsis. In dealing with osteomyelitis the author has vigorously emphasized the general lack of thoroughness in early operations. Do not simply make a few drill holes in the diseased bone but make large openings, one-half inch in width by three or four inches in length for drainage and always, if sequestrum has formed, complete removal of this as well. Then after the diseased process has been thoroughly removed, pack the wound with vaseline gauze strips and place the part at complete rest in a plaster cast. He presents a striking array of cases treated by another method with results which are shown to be highly unsatisfactory. Such conditions, for example, generally recognized as felons which are so customarily treated by a poultice and drainage sometimes by the reverse method, drainage and poultice, are treated by the author with wide open incision and drainage without closing the wound, packed with sterile gauze strips and the hand placed in a cast. Such treatment seems to have brought about almost uniform and quick cure without the resulting destruction and deformity observed by other methods of treatment.

In the chapter on compound fractures debridement is done thoroughly, fragments of bone attached to periosteum being left in situ, the wound left open, a maximum of attention being given to the proper correction of the fracture and a minimum of care to the wound itself. The author does not believe that mechanical cleansing of the wound can be sure and where such wounds are closed, very many times infection is closed in also. He believes that correct position with relief of muscle spasm and pain may be obtained early, that is, immediately following the injury and by proper position, immobilization and adequate drainage with a minimum of dressing, the wound will take care of itself while the fracture is uniting.

According to the great volume of case reports included in the chapter on clinical results these have been far better by his plan of treatment than by any other, the time loss far less for the patient, while the doctor's own time is conserved by the lack of necessity for frequent dressings. If we should offer any criticism at all of the treatment as outlined in this book, it would concern using such extensive immobilization. One wonders why the necessity, for example, of a plaster cast immobilizing the pelvis and also the opposite leg for osteomyelitis of the tibia. This book is well worth reading, even if only for the purpose of more thoroughly learning the lesson of complete and prolonged rest, complete immobilization and thorough drainage without wound closure. KELTON.

MECHANOTHERAPY. A Text-book for Students. By Mary Rees Mulliner, M.D., formerly Instructor in Mechanotherapy in the Summer School of Harvard University, etc. Illustrated with 57 Engravings. 265 pp., $2.75. Lee & Febiger, Philadelphia, 1929.

The author states that mechanotherapy is virtually a manual therapy for treatment of the body by means of manipulations, massage and special exercises. There are many things that a mechanotherapist does not find in the usual books on this subject, some of which are aimed to be presented in this volume. Emphasis is placed on the necessity of making purposive pressure in the practice of massage, every movement being made with a deliberative purpose of accomplishing something toward a return to normal conditions. The essential feature of massage is intermittent pressure, exerted upon the skin and the tissues under it, the effects being more or less marked according to the firmness of the tissues and force of the pressure. Procedures of massage are presented in detail, followed by a chapter on their physiologic effects. Much attention is given to faults of posture, observed chiefly in the spine and the body in general. The relief of such conditions is explained through a variety of manifestations. Emphasis is placed on the evil effects of pronated feet. Exercises to correct this condition are detailed, and the importance is emphasized of the use of properly fitted shoes. The treatment of other pathologic conditions is presented in this volume.

PHYSICAL EXAMINATION AND DIAGNOSTIC ANATOMY. By Charles B. Slade, M.D., formerly Chief of Clinic in General Medicine, University and Bellevue Hospital Medical School, New York. Fourth Edition, thoroughly revised. 12mo of 196 pages with 43 illustrations. Philadelphia and London: W. B. Saunders Company, 1929. Cloth, $2.00 net.

This little volume is not a text-book study of physical examinations, but a practical application of the principles involved in making a physical diagnosis. It is especially useful for the student unfamiliar with exhaustive diagnostic problems. The principles are clearly presented relative to inspection, palpation, percussion and auscultation. There are chapters on surface markings, with emphasis on their significant importance. The illustrations are of value, and well supplement the text. The appendix contains a chapter on physical signs and diagnosis of pulmonary tuberculosis.

THE ART OF SURGERY. A Text Book for Students and Practitioners. By H. S. Souttar, D.M., M.Ch. (Oxon), F.R.C.S. (Eng.) Surgeon, London Hospital. Cloth, 624 pp. $12.00. Paul B. Hoeber, Inc., New York, 1929.

One is attracted by a new title for a surgical work and the present volume is interesting in that respect as well as from the material contents. It is really a discourse on the subject of general surgery in its accepted phases. The fundamentals are dealt with most fully, while the non-essentials are noticeably absent. Thus the student is enabled to obtain a sense of values without being overwhelmed, as the author states, by mere bulk.

The illustrations are almost entirely by line drawings and are supplied in profusion on the margin of the page. There is an absence of detail in the description of all operations, a commendable feature in this kind of work. The book is well balanced in the treatment of its component parts and the teachings throughout are consistent with the modern practice of surgery in this country.

FORBES.

THE CONQUEST OF CANCER by Radium and Other Methods. By Daniel Thomas Quigley, M.D., F.A.C.S., Instructor in Surgery, University of Nebraska, College of Medicine, etc. 539 pp., 334 Engravings. $6.00. F. A. Davis Co., Philadelphia, 1929.

In analyzing the etiologic factors of cancer the author contends it is due to one or more predisposing causes, such as mechanical, chemical or thermal irritation, which invariably lead to a chronic low grade infection that is the immediate cause of the new growth. In support of this theory we find such statements as: "The dominant thing in the stimulating of cells to proliferate cannot be other than presence of low grade pathogenic microorganisms"; "acidity is one of the requisites to the development of the cell proliferation we call cancer"; "it is evident that cancer is not produced by any one germ but any germ that may localize, colonize and maintain its existence in any part of the body may produce the necessary irritating toxins, and set in motion the chain of events that eventually become cancer."

There is an interesting chapter on precancer. The author contends that we must "make our diagnosis before it is cancer, or at least while the cancer is still local. Cancer that has ceased to be local has ceased to be curable." He contends that microscopic examination is not infallible and should not be relied upon too implicitly; that biopsy often disseminates the disease. "Biopsy is usually not necessary but if it is done the diseased area from which the specimen is taken should be thoroughly rayed with radium immediately before the biopsy. This will reduce the vitality of the cancer cells and will limit the possibility of dissemination or transplantation."

The book contains a bountiful collection of good photographs. The excellent results secured which these illustrations show cannot but impress one with the skill of the author and the reasonableness of many of the theories propounded. The greatest disappointment in the entire book is the failure to discuss radiologic technic, especially of the radium applications. This is the most important text on cancer or radiation therapy that has been published this year. Coming from an experienced surgeon, it cannot help but create a "stir" in surgical circles. The book is indispensable to the radiologist, and to the great majority of surgeons it should prove an "eye opener" in pointing the way to the interwoven connection of surgery and radium in the conquest of cancer. STEPHENS.

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American Illustrated Medical Dictionary. A complete Dictionary of the terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, Veterinary Medicine, Biology, Medical Biography, etc. By W. A. Newman Dorland, M.D., Member of the Committee on Nomenclature and Classification of Diseases of the American Medical Association. Fifteenth Edition, Revised and Enlarged. Octavo of 1427 pages, 525 illustrations, 107 of them in colors. Philadelphia and London: W. B. Saunders Company, 1929. Flexible binding, Plain $7.00 net, Thumb Index $7.50 net.

Every physician needs a late edition of a standard dictionary in order to keep abreast of modern medical literature and nomenclature. This book does not claim to be an encyclopedia, but it is a dictionary full of definitions of the terms of medicine and kindred branches. Considerable collateral descriptive matter has been included, such as the combination, sources, properties, uses and dosage of drugs, and etiology and symptoms of important diseases. Illustrations have been chosen for their practical value in aiding the text, rather than their pictorial beauty.

This edition has received the most thorough revision of its long career of thirty years. Several thousand of the newest terms have been added that appear for the first time in any dictionary. Its most important feature is the establishment of a definite standard in terminology, spelling, hyphenization, etc. The volume has been reedited, with the assistance of men distinguished in medical literature and leaders in many important branches of medical practice. One will find a fund of information in this book, and surprises will await him when seeking definitions of latest words in medical use. It will be of value as the possession of any physician.

The Surgical Clinics of North America. (Issued serially, one number every other month.) Volume 9, number 4. (Mayo Clinic Number—August, 1929.) 208 pages with 72 illustrations. Per Clinic Year (February 1929 to December 1929), Paper $12.00, Cloth $16.00. Philadelphia and London: W. B. Saunders Company.

Like all publications pertaining to the Mayo Clinic, this volume is replete with much practical information on many surgical problems. The numerous surgeons in this clinic in their routine work cover nearly all forms of surgical procedures. Judd and Brown offer an interesting description of cortical abscess of the kidney. Dermoid cyst of the pancreas is presented by Masson and Caylor. Lillie discusses local anesthesia for tonsillectomy, offering indications and contraindications, the advantage of local anesthesia being the cooperation of the patient. Jones describes a number of curious cases of skin grafting to remedy various defects. A case of multiple abscesses of a frontal lobe of the brain is presented by Learmonth. These are merely a few selections from many clinical reports.

Diseases and Deformities of the Spine and Thorax. By Arthur Steindler, M.D., F.A.C.S. Professor and Head of the Department of Orthopedic Surgery of the Iowa State University Medical School. 78 Plates. Cloth, 573 pp. $12.50. C. V. Mosby Co., St. Louis, 1929.

After reading this six hundred page book one concludes that nothing has been overlooked. The following quotation from the preface summarizes somewhat the objective of this volume. "It should be the foremost effort of a book of this kind to develop orthopedic judgment, or, as Sir Robert Jones so aptly puts it, orthopedic conscience. Without it no perusal of books will enable the reader, be he beneral practitioner or specialist, to apply to a given contingency the proper decision."

Almost one-quarter of the book is devoted to the subject of scoliosis, and the author's theory of the mechanics of the spine and his treatment of the deformity is fully described. The chapter on "low back pain" is very interesting. It should be read by all surgeons who are called upon to treat this troublesome disability. Other contributors to the literature are generously credited and altogether it is a surprisingly interesting book. It is well and copiously illustrated.

Murray.

Modern Methods of Feeding in Infancy and Childhood. By Donald Patterson, B.A., M.D. (Edin.), M.R.C.P. (Lond.), Physician for Diseases of Children, Westminster Hospital, etc. And J. Forest Smith, M.R.C.P. (Lond.), Physician to Out-Patients, St. Thomas's Hospital, etc. Second Edition. 149 pp. $3.00. Paul B. Hoeber, Inc., New York, 1929.

The authors have dealt with the subject of infant feeding with a minimum of technicalities. The chapters on breast feeding are especially good. The chapters on artificial feeding take up the proprietary foods in considerable detail. The deficiency of these products and means of correction are indicated. The book is valuable because it is a concise exposition of the subject of infant feeding from the English standpoint.

C. L. Smith.

The Treatment of Fractures. By Lorenz Böhler, M.D., Chief Surgeon and Director of the Vienna Accident Hospital. Authorized English Translation by M. E. Steinberg, M.S., M.D., Consultant Surgeon to U. S. Veterans' Bureau, Portland, Ore. With 234 Illustrations. 185 pp. Wilhelm Mandrich, Vienna, 1929.

This small book is very concise on the treatment of fractures. The usual types are discussed rather than the unusual. The important facts concerning the treatment of each fracture are given in a few words and one does not have to read a great deal to find out what type of treatment is recommended. The open and closed methods are both discussed. Many kinds of very useful apparatus are presented. Any one treating fractures will be very much interested in this book.

Buckner.

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ADDRESS

SUGGESTIONS TO THE STATE ASSOCIATION*

F. H. Brush, M.D.
YAKIMA, WASH.

We wish to extend you a most hearty welcome to the fortieth annual meeting of Washington State Medical Association. If you are well entertained, which I hope you will be, it will be due to the efficiency of my committees. If you are not, it will be my fault.

Early in my administration I determined to build up the medical organization in Washington, and with this in mind I set out to visit all the county societies. With my limited time I soon found I could not cover all the territory, so I made an effort to see all the smaller societies. To give you some idea of the task, there are thirty-nine counties in the state. There are twenty-one county societies. Some counties are so sparsely settled and with only two or three physicians that permission is given for these to unite with the nearest active county society. There are 1838 physicians in the State, 1325 of whom are members of county and state societies. In comparison with other states Washington is well organized. A neighboring state with 1250 physicians has less than 600 in the state society and most of those are from the larger cities.

As a county secretary I found that loss of interest from failure to have good snappy programs was the cause of many members of the county units becoming suspended for failure to pay dues. Every county society should make the best man secretary, and when it once has a good one, he should be religiously returned to office each year, as he is an asset to the county and to the state organization. The same I think is true to a great extent with the state society. In the end you get out of your county medical society only in a measure about what you put in with the effort to maintain it. With this I will leave the subject to be more ably dealt with by Dr. Rook in his paper on medical organization.

I would like to recommend that this State Association adopt the plan of having a part time or full time secretary. I have found that each year, following the election of a new president, there is a lapse of activities for two months while the new president gets acquainted with his job, and a great deal of the initiative depends on the secretary at first. About the time the president has served his year he begins to learn what it is all about.

I would recommend some active investigation of medical economics both by the state association and the county societies. State medicine is the bogey the legislatures hold before the medical men each biennium. The national congress is asked to encroach upon medical practitioners by increasing the favors granted to ex-soldiers, their families and dependents. Private concerns are viewing the field of medical care with an avaricious eye, and last but not least, the public is led to believe that the private physician is an expensive luxury which could be avoided by group care.

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*President's address, read before the Fortieth Annual Meeting of Washington State Medical Association, Yakima, Wash., Aug. 29-31, 1929.

SYMPOSIUM ON TUBERCULOSIS*

PRESENTED BY THE TUBERCULOSIS COMMITTEE
OF THE WASHINGTON STATE
MEDICAL ASSOCIATION

Frederick Slyfield, M.D., Chairman

INTRODUCTION

Some time ago a doctor was called in emergency to see a patient having profuse hemorrhage from the lung. The usual treatment failed utterly to relieve the situation, so artificial pneumothorax was done with complete success. Subsequently it was learned this patient had been under the care of another physician for six months, during which time he had seen her four times and had done nothing, other than tell her to rest and eat all she could because, he said, the diagnosis was made and what more was there to do.

The case was one of unilateral tuberculosis moderately advanced and quite active. The patient was up and down as she pleased and evidently had no conception of the gravity of the situation. Lung compression has converted this case from one progressing toward certain death to one with every hope of a successful outcome. The physician formerly in charge asked, "what did you do, put in a tube," indicating clearly that, although known to be a very excellent physician, he was grossly ignorant of the methods employed in the management of tuberculosis.

In another case the physician was asked by the husband of the patient if tuberculosis might not be the cause of the trouble. The doctor assured him he was on the wrong track. The husband then sent some of the patient's sputum to a laboratory for examination, and received the report, "tubercle bacilli found." The case had been under this doctor's care for over a year with incorrect diagnosis and inadequate treatment. The patient will certainly die, and it is the doctor's fault.

Numerous experiences like these call attention to the fact that most of us have neither time nor interest to study this extremely important subject. A large percentage of our brethren have innocently made themselves targets for unfavorable criticism and often bitter reproach on the part of the tuberculous populace, through negligence to read and to heed. All over the country the same situation prevails. Patients entering institutions give histories, showing they have had more or less similar experiences. The case has been through the hands of several men before correct diagnosis has been made. Some of these men did not examine the patients at all. Others listened to the chest without the expiratory cough. Most of them did not examine the sputum. And when diagnosis was correctly made, the treatment advocated too often was hopelessly inadequate, if not entirely silly.

Of course, this does not apply to all. We have plenty of evidence of great interest and care on the part of the able conscientious physician who is doing as much for his patient as could the specialist. We are not trying to reach him. But do not be too ready to put yourself in that class.

An opportunity is being presented now whereby every physician may quickly improve his ability to recognize and manage the tuberculous case. This will promptly result in state-wide improvement of the situation, which must necessarily and justly be credited to the profession, resulting obviously in the saving of life on a large scale, and establishing a high degree of respect for the profession.

The Tuberculosis Committee of the Washington State Medical Association has arranged a series of articles, comprising an outline of tuberculosis. The committee has attempted to cover the entire field of pulmonary tuberculosis as briefly and concisely as possible, with some references to intestinal and juvenile tuberculosis. If one will read the whole matter carefully, heeding what he has read, he may be impelled to do his bit toward improving the deplorable situation which exists today.

The following statements are given for the purpose of aiding the standardization of our ideas regarding tuberculosis.

1. Tuberculosis is not hereditary.

2. The danger of contact in the child is very great, in the adult almost negligible.

3. A physician should have nothing to do with a tuberculous patient unless he is willing to give the case thorough and thoughtful attention, and assume the obligation of the protection of children in the home.

4. There are four steps in the diagnosis of early tuberculosis: history, physical examination, roentgen ray, laboratory work. The most important is a carefully taken history.

5. Too much value must not be placed on a negative laboratory or roentgen ray report. Fluoroscopic examination alone is inadequate as it often deceives both patient and physician.

6. A patient with advanced tuberculosis may look and feel remarkably well.

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* Read before the Fortieth Annual Meeting of Washington State Medical Association, Yakima, Wash., Aug. 29-31, 1929.

7. Spitting of blood "out of a clear sky" and pleuritic effusion are usually tuberculous. Most of these cases, if not treated as tuberculosis, have future trouble.

8. Although most early cases improve and become symptom-free after a brief rest, the tuberculous lesion has not healed. Prolonged rest and intelligent supervision are necessary even though the patient feels perfectly well.

9. The tuberculous patient with symptoms of active disease, whose treatment consists of visits to the doctor's office, no matter what is done there, sooner or later will reproach the physician for his failure.

10. No one has ever been able to prove that climate has anything to do with tuberculosis. Tuberculous cases develop in all parts of the world, are fatal everywhere, and are cured everywhere. If allowance be made for unreasoning prejudice, no difference in results can be detected.

11. The prognosis improves with increasing age. It is not true that a patient has a better chance because he is young.

INFECTION AND PATHOLOGY

Walter S. Griswold, M.D.
SEATTLE, WASH.

The fact that the tubercle bacillus is covered with a waxy coat makes the reactions produced by these germs somewhat different from those of other organisms without such a protective coating. This germ lives but a short time in direct sunlight and gradually loses virulence in even diffuse light, so that transmission must occur soon after expulsion either in a fine spray from the mouth of the patient on coughing or by being carried on dust that has not been long exposed to sunlight or in food. There are other conceivable methods of transmission but these are undoubtedly the most common means. It is also probable that small children particularly are infected by kissing.

The tubercle bacillus grows slowly and best on a simple medium. It does not have the power of readily breaking down the more complicated protein molecules as some of the other germs do, yet by its prolonged action it does produce the typical cheesy matter in the body tissues. Some infections undoubtedly take place through the alimentary canal, but it is the opinion of most workers at present that most cases of pulmonary tuberculosis are the result of inhalation of the germs. If we remember that the germ is nonmotile, that it produces little if any extracellular toxin and is covered with a waxy coat, we must concede that it is carried into the tissues by some wandering cells, or it must lie quietly in one place for some time before it can produce pathologic changes. It is probably the product of the breaking down of the dead germ and dead tissue that produces the symptoms.

The bronchi and the bronchioles are lined with ciliated epithelium that tends to move the germs or dust particles outward, so it is probable that the germs which produce disease must get beyond this epithelium, which means they must get into the alveoli or at least into the passages beyond the ciliated epithelium which extends down to the tubules of less than half a millimeter in diameter. Those that produce infection in the larger bronchioles are probably the ones that are picked up by the wandering cells and are carried into the lymph and blood vessels. Those that reach beyond the ciliated epithelium may also be carried into the lymph and blood vessels by wandering cells, or there may be proliferation and exudation about them so that they may produce the lesions of tuberculosis without actually being engulfed and carried away by wandering cells.

The reaction of the body to the tubercle bacillus depends upon whether or not there has been a previous infection. In the primary infection the reaction is slow and not so intense. If, however, there is an enormous number of germs introduced at once, the reaction is more like that of a second infection. In other words, it is somewhat a matter of degree rather than an absolute difference. A primary infection always makes an individual more sensitive to another infection, so that the battle against the germs may begin much more promptly and with greater intensity. Practically all adults have had more or less infection in early life so that they react with intensity before the germs have multiplied to any great extent in the body, and so have more chance of recovery than if earlier infections had not taken place.

Koch observed that, if guinea pigs were injected with tubercle bacilli, there was not much local reaction but after a time the regional lymph glands were involved and finally a more general tuberculosis developed. However, if he allowed the proper interval to elapse and gave the animal a second injection, there was a marked local reaction at the site of the puncture which soon produced necrosis and sloughing, leaving an open wound. This illustrates the difference between the primary and secondary infection, and probably has a great deal of practical importance in the pathology of tuberculosis, for when conditions are actually right, a newly infected area may necrose and produce a cavity regardless of whether the infection occurs from germs within the individual's body or from extraneous sources.

The characteristic lesion of tuberculosis is, of course, the tubercle. This consists of a central multinuclear giant cell surrounded by epithelioid cells, these having the appearance of epithelium cells but derived from wandering or from connective tissue cells. These are usually surrounded by a wall of round cells. There are no new formed vessels within the tubercle. In this respect it differs from the productive inflammation caused by most other germs. The tubercle bacilli are found almost exclusively within the giant cell and usually near its margin.

A single tubercle is usually somewhat smaller than a millet seed and just visible to the naked eye. Tubercles frequently occur close enough together so that they fuse to make larger areas. They become cheesy and softened or have lime salt deposits so as to make calcareous nodules, or they may become fibrous. In most or all cases of tuberculosis in which healing takes place there are probably some tubercles at least, in which living germs are encapsulated, and this may be the explanation of the prolonged partial immunity which follows the primary infection. If all tubercle bacilli were eliminated, it is likely that the immunity would disappear.

While tubercles are the specific lesion produced by the tubercle bacilli, they also produce inflammation with exudation. This exudate consists of serum and white blood cells, and in the exudate there may be found broken-down tissue cells. The exudate may fill the alveoli of the lungs so as to produce consolidation, somewhat resembling that of pneumonia produced by other bacteria. In the slower advancing types of tuberculosis there is healing with a production of fibrous tissue going on in some areas, while the new lesions are being formed in other areas.

Hemorrhage has always been a rather common occurrence in tuberculosis. It may appear early and the prognosis in these cases is not particularly bad. A tubercle may occur within a small blood vessel and invade its wall so that it ruptures and bleeds. This may be when the primary tubercle is in a small lymph gland at the bifurcation of the vessel. It is also conceivable that the tubercle may occur in the wall of the blood vessel. In either case a hemorrhage may occur from a very small lesion. It is not uncommon to have this lesion so small that it cannot be located by any method of examination.

There is another type of hemorrhage which occurs in some advanced cases that is not so benign. A fairly large diseased area of the lung may become cheesy and softened and the contents be expelled into a bronchus. This would, of course, leave a cavity. A fair sized blood vessel may pass through this cavity and escape destruction for a long time and later rupture into the cavity and produce severe hemorrhage, sometimes severe enough to cause death. Granulation tissue may form on the inner wall of the cavity after the necrotic material has been expelled and from this there may be small hemorrhages. These are not particularly dangerous to life but are likely to continue over a long period of time. The outlook is not as favorable as with hemorrhages that occur in early tuberculosis, for obliteration of cavities does not readily occur and secondary infection keeps up irritation.

Tuberculosis of the pleura is a very common condition and is usually, if not always, due to an existence of tuberculosis over areas in the lung within the pleura. This may be a dry pleurisy or there may be a large amount of fluid produced. In either case there is likely to be extensive adhesions which may obliterate the pleural cavity. These adhesions are frequently extensive enough to prevent the use of pneumothorax as a therapeutic measure. They also in a measure prevent the occurrence of spontaneous pneumothorax. However, in some cases where an artificial pneumothorax has been found impossible, spontaneous pneumothorax may occur in the areas that are not firmly adherent. Extensive use of the roentgen ray in diagnosis in recent years has shown that small spontaneous pneumothorax is by no means uncommon.

CLINICAL TYPES

John F. Steele, M.D.
TACOMA, WASH.

CHILDHOOD TYPE

Many clinicians claim that tuberculosis in children is a rare disease, but the fact remains that seventy per cent of all children reaching the age of sixteen are infected, but this infection does not mean that active disease is present. Of course, many acute cases are due to massive infection from a parent or an older brother or sister, and this produces a bilateral, miliary or bronchopneumonic type of tuberculosis and these little patients do not last long. But when we consider chronic tuberculosis in children, we find that their clinical manifestations differ widely from the adult type.

The symptoms are usually few in number and the child's age makes it difficult to elicit them. The cervical lymph nodes are normally palpable in children, but in tuberculosis one gland is much enlarged or there are many adhesions around a certain gland, fusing several together. Another symptom is afternoon rise of temperature. Landois gives as the normal limits 99.5° to 100.1° in children from five to nine years old because of their increased or more active metabolism.

I shall not take up anything on physical signs, roentgen ray and differential diagnosis of these various types of tuberculosis because they are dealt with elsewhere. The tracheobronchial lymph nodes are always involved. Children presenting obscure symptoms, such as loss of weight or underweight, loss of appetite, afternoon rise of temperature over 100°F., flushed cheeks in the afternoon with an anemic appearance otherwise, susceptibility to colds, with or without cough, some dyspnea and pain in chest, especially between shoulder blades, may be found to have tuberculosis of the tracheobronchial lymph nodes. This is the most common type in children. It is usually the initial lesion and extends from these glands to the lungs.

ADULT TYPE

Acute pulmonary tuberculosis may exist in childhood. Also an adult may have a juvenile type of the disease, but most commonly acute tuberculosis is found in people over fifteen. It occurs in two forms in the lungs, the pneumonic or lobar form and the bronchopneumonic form.

Acute pneumonic pythisis is a rare condition, but the subacute form is fairly common. It may terminate fatally in a few months; the acute symptoms may subside and the lesion remain localized; or it may become the chronic progressive type. The usual focus is an old chronic lesion in the apex of one lung which suddenly lights up with activity. The lesion may only involve a part of a lobe and it may include a whole lung or even parts of each lung.

The patient is seized with a chill and severe pain in the base of the affected lung. The temperature rises rapidly and is continuous. There is a cough with blood-streaked or rusty sputum. The respiratory rate is increased. Usually a diagnosis of lobar pneumonia is carried until long after the usual duration and no crisis has occurred. The sputum usually becomes mucopurulent, may contain tubercle bacilli, and the temperature curve is more hectic in character. There is much sweating, especially when the patient sleeps, also he may have many chills. Emaciation is rapid.

Now we shall deal briefly with the bronchopneumonic type of acute tuberculosis. This is frequently found as the cause of death in infants and young children who have died of tuberculosis and sometimes follows measles or whooping cough. It is also fairly common in negroes, but rather uncommon in white adults.

In cases of chronic ulcerative tuberculosis an acute bronchopneumonic process sometimes follows the aspiration of the contents of a cavity or following hemoptysis. Very often the bronchopneumonic process following hemoptysis will be in the opposite lung. The patient may have a severe chill or several successive chills; the temperature pulse and respirations all rise quite rapidly; the patient looks ill and he is ill. He has a cough, some fever, pain in the limbs, loss of appetite, loss of weight and strength. The sputum is at first mucoid, but later becomes yellowish or greenish in color, may be blood-streaked and tubercle bacilli are usually abundant. Signs of cavitation may be present.

Miliary tuberculosis is another acute type. It is caused by tubercle bacilli being thrown into the blood or lymph channels in large numbers. It is usually diagnosed by the roentgen ray in pulmonary infection by the small miliary nodules scattered almost uniformly throughout both lung fields. These tubercles are practically all of the same age, because they come from the same inoculation.

Miliary tuberculosis may affect any organ, the lungs, spleen, liver, kidneys, peritoneum and meninges. The prognosis is very grave in this disease and death usually comes soon.

It may come from some caseous focus in a patient who has been previously healthy, or it may follow the breaking of a necrotic mass into the blood stream in chronic tuberculosis, or it may come on after a hemorrhage, where thousands of bacilli have gained access to the blood stream. In any case death soon follows.

Chronic fibrocaseous tuberculosis. This is the common type of pulmonary tuberculosis met clinically. "It consists of areas of necrosis which rupture and are thrown off, leaving cavities" (Pottenger). An inflammatory process is found around this; new tissue is produced to supplant the necrotic areas or the tubercles which have not yet softened, and the formation of connective tissue about the walls of cavities.

In progressive cases cavities are formed most commonly at the apices and the disease spreads downward. You may find a cavity in the apex of the lower lobes on either side. Cavities in the apex are more favorable for healing than those in the lower lobes, because of good drainage. The prognosis depends mostly on the extent of the lesion and on whether ulceration or fibrosis predominates. Occasionally an ulcerative process will predominate first and fibrosis later, which usually means an arrestment of the process.

Lastly we shall consider fibroid tuberculosis. In certain cases tuberculosis assumes a very chronic form, produced by bacilli of low virulence, and characterized by extensive fibroid changes in the lung.

Due to the low virulence of the infecting organisms or to the high degree of resistance developed by the host, there are few toxins thrown out. Therefore, the tissues are irritated but not destroyed, but many times there is considerable contraction of the lung, due to hard bundles of new tissue connected into scars. Compensation takes place in the opposite lung which becomes emphysematous. The mediastinum is drawn toward the contracted lung and all the thoracic organs are compelled to adjust themselves. Sometimes pouching of the bronchi due to irregular contraction causes bronchiectasis.

Fibroid tuberculosis is accompanied by extensive connective tissue formation and the bacilli are well walled in and many of them die. The prognosis in these cases is favorable.

SYMPTOMS

L. G. Woodford, M.D.
EVERETT, WASH.

The onset of symptoms may be insidious and often occurs before definite physical signs or definite roentgen ray evidence of pulmonary tuberculosis can be obtained. Latent tuberculosis may present no constitutional symptoms. Healed or quiescent cases may present only past history of symptoms. Early or minimal tuberculosis presents few constitutional symptoms. The symptoms past and present determine largely the necessity and extent of active treatment and prophylactic care.

PROGRESSIVE SYMPTOMS

Symptoms due to a fresh spread of the disease into pulmonary tissue may last several weeks or months and indicate the tendency of the disease to progress or to become quiescent. The symptoms may be due to increased absorption of toxins, an autotuberculin reaction from previous foci, lasting for a few days or weeks.

Tuberculous symptoms may be present symptoms, may have occurred previously at some time during the present illness or may have appeared during some previous illness. It is helpful to classify those symptoms of active tuberculosis which produce general reactions as constitutional, those which produce local reactions as localizing symptoms. The former are produced essentially by toxemia, the latter by the local pathology of the disease.

CONSTITUTIONAL SYMPTOMS

Lack of endurance appears at the onset of seventy-five per cent of cases and may be grouped with nervous manifestations. Inability to do the usual physical or mental activities without fatigue, especially in the afternoon. More sleep is required; insomnia or disturbed rest may be present.

Neurasthenic symptoms often have an underlying tuberculous toxemia as the origin. A nervous breakdown may indicate the onset of pulmonary tuberculosis. Persistent weakness following whooping cough, measles or influenza may indicate the onset of the disease. Loss of strength is most often noted after the moderately advanced stage is reached.

Weight. The usual weight of a tuberculous individual is often below standard. Loss of weight is often coincident with the onset of active tuberculosis. The patient's weight chart is a fairly accurate record of the tendency of the disease toward healing or extension.

Gastrointestinal. Anorexia is associated with toxemia and loss of weight. It is often present in early active disease. However, many chronic cases have good appetites and high temperature. A good appetite with fever often differentiates tuberculosis from pneumonia, typhoid and other febrile diseases.

Constipation is sometimes associated with the onset of active tuberculosis. It may alternate with diarrhea when there is extreme toxemia or when an extension of the tuberculosis to the bowel mucosa occurs. Diarrhea may occur from improper feeding. Gas eructations after eating, gas in the stomach and chronic indigestion are common. Various investigators have found gastric symptoms or dyspepsia present in 36 to 70 per cent of cases.

Temperature. Persistent afternoon fever suggests tuberculosis. Unexplained febrile attacks are often due to it. A record should be carefully kept in all cases of suspected tuberculosis and the thermometer must be held five minutes. Well women may have a premenstrual temperature of 99.6°.

Early active tuberculosis at rest may quickly become normal in temperature or show only occasional elevations of a few tenths above normal. The temperature usually indicates the activity of the disease and is the best single daily indicator to the physician.

Increased pulse rate may persist long after temperature has become normal under rest treatment, and if persistent, indicates toxemia and activity of the disease. If extreme it is an unfavorable symptom in prognosis.

Nightsweats are common with advanced disease. Chills are less common. They occur more frequently with advanced disease, cavitation or caseation of foci.

Cough is a common symptom. If persistent over a period of a month, cough requires an explanation. Unexplained cough is often explained when tuberculosis is considered. A tuberculous patient may fail to notice a slight morning or throat clearing with slight expectoration, but there are few cases of pulmonary tuberculosis without some cough or some morning expectoration.

Expectoration may not be present in early tuberculosis or may be only mucoid. Later cases have foci which have broken into the air passages and have purulent or mucopurulent sputum which may or may not contain bacilli. About 60 per cent of minimal tuberculous cases are found to have negative sputum. Tuberculous sputum may occasionally be streaked with blood. Streaked sputum is very suggestive of pulmonary tuberculosis and occurs during periods of active disease and after periods of severe exercise or work.

Hemorrhage. Blood exceeding one teaspoonful expectorated from the lungs is almost pathognomonic of active pulmonary tuberculosis. Ninety per cent of these occurrences are from pulmonary tuberculosis. Such a hemorrhage justifies a presumptive diagnosis of this disease.

Pleurisy accompanied by effusion nearly always means tuberculosis. Fluid is clear or cloudy, but whether tubercle bacilli are found or not, it is usually tuberculous. Dry pleurisy is a common symptom of pulmonary tuberculosis.

Pain in the chest. Occasional pain over an apex, in the shoulder or under the sternum is suggestive of pulmonary disease. Recurrent pain or discomfort from pleural adhesions or in the vicinity of parenchymatous lesions is a common complaint. Pain or pleurisy are often noticed after periods of excessive physical activity or with sudden changes in the weather.

Hoarseness is often a symptom of tuberculosis. It is due to reflex nerve pressure from bronchial glands or from tuberculous foci, to toxemia, to sputum in the larynx or to actual tuberculous involvement of the larynx.

GENERAL DIAGNOSIS

Frederick Slyfield, M.D.
SEATTLE, WASH.

In a surprisingly large percentage of cases the history alone points to the diagnosis.

Family history. Since tuberculosis is not inherited, the matter demanding chief attention is contact. If the suspect has at any time in his life lived in the same house with a tuberculous parent, brother, sister or nonrelative, there has certainly been ample and oft repeated opportunity for tubercle bacilli to become implanted in his system. It does not matter in the least whether the source of infection is father, twin brother or no relative at all. Contact over a considerable length of time is the vital point. If the suspect's life story shows such a situation, then any symptom suggesting tuberculosis has greater significance. This matter is mentioned under family history, because as a rule it is brought out only by quizzing the patient about his family.

Another important point is the number of close relatives who have had tuberculosis. There is just as much difference in tissue susceptibility to the tubercle bacillus as there is in soil fertility in the matter of corn or other grain. Corn will not grow in unfertilized or unwatered sand, while it will produce a splendid crop in suitable soil. So with animal tissue. Some is favorable, some unfavorable soil. This difference in "soil" is of course inherited, but give due consideration to contact. It is by far the more important.

A tuberculous mother or father may infect the entire family. One or two children die early of some form of acute tuberculosis, frequently unrecognized, and the other children may show little evidence of their infection for years. Then one by one on reaching maturity they break down with pulmonary tuberculosis. Friends of the family look upon this as direct proof of the hereditary nature of tuberculosis, overlooking the fact that all these people as children were thoroughly exposed to repeated infection. The same tragedy would have engulfed them, had the source of infection been an unrelated housekeeper or nurse.

Patient's past medical history. In the *Journal A.M.A.*, June 1, 1929, Webb, in speaking of the importance of careful history taking says, "the physician should question his patient regarding exposure and especially family contact, loss of weight, lassitude, sweats, frequent colds, hemoptysis of a dram or more, pleurisy with or without effusion, cough, hoarseness, nervousness, stomach upsets, menstrual irregularities, rectal abscess and headaches. These are all important questions to be answered."

A teaspoonful or more of blood coming up into the mouth means tuberculosis in more than 90 per cent of cases. The fact that the patient may look and feel well makes its tuberculous nature even more probable. Pleurisy is usually tuberculous and pleuritic effusion nearly always so. Do not be misled by the patient's subsequent improvement; that is the usual thing. The immediate prognosis is good, but the ultimate prognosis is bad unless these effusion cases are treated for the underlying tuberculosis.

Fistula in ano is frequently a forerunner or an accompaniment of tuberculosis in the lung. Frequent or protracted colds which affect the general health suggest tuberculosis, particularly in one who is underweight. Persistent cough with or without sputum is suspicious, but it must be remembered that many tuberculous patients do not cough.

Slow recovery from any illness, especially influenza, implies the presence of tuberculosis. History of persistent glands in the neck, when not due to diseased tonsils or other definite nearby infection, usually mean this disease. These points and many others which come out in quizzing the patient about his medical history are so extremely important that in many cases the diagnosis is certain before he is examined.

The past medical history naturally leads up to the present illness, about which the patient will talk more freely and with less interrogation. (See section on symptoms). Then comes the physical examination.

Physical examination. The two first essentials are a quiet place and a stripped thorax. Inspection, palpation and percussion are here given only a few words because of their extremely limited value in the great bulk of cases. After extensive disease has developed, easily recognizable by other methods of examination, some fine points may be brought out by these measures. Certainly in pleuritic effusion or consolidation of part of a lung percussion is very helpful and gives immediate presumptive information.

Auscultation gives much information to the examiner. It is by far the most important procedure in the detection of abnormal physical signs in pulmonary tuberculosis. What sounds can one hear? Where are they found? What do they mean?

The most characteristic sound heard in the chest in early tuberculosis is the fine crepitant rale. Such rales are found in the upper half of the lung, anterior or posterior, most commonly (but not necessarily) above the second rib anteriorly and above the third spine posteriorly. Crepitant rales in the upper half of lung mean tuberculous infiltration, usually an area of consolidation.

How recognize the crepitant rale? Roll a lock of your hair near the ear between the thumb and index finger. The sound produced is almost identical with that of the fine crepitant rale. If the rales heard in the chest are coarser than this, they are the subcrepitant type which indicate in the upper half of the chest caseation in a tuberculous area. In the lower half they usually mean non-tuberculosis.

The fine crepitant rale is usually overlooked, even when definitely present, because of failure to have the patient cough. Ask him to exhale completely, cough (when lungs are empty), then quickly inhale. Repeat many times. This simple procedure is of life saving importance. The persistence of rales for two weeks in the upper part of either lung so often means tuberculosis that it is wise to make a presumptive diagnosis at once. It must be remembered that tuberculosis may exist without rales or that rales may be present, though we fail to elicit them.

Breath sounds. Don't be confused or overwhelmed by such a term as bronchovesicular. It is simple. The normal rustling sound heard over the entire lung is vesicular; the sound heard directly over the trachea is bronchial and a mixture of these is bronchovesicular. Almost any change in the lung parenchyma makes the normal vesicular sound a little bit bronchial in character. Over a well established consolidation it is completely bronchial and the whispered voice comes through as if the stethoscope were on the trachea. Usually the first change noticed in early tuberculosis is a slight bronchovesicular sound in the apical region. On ordinary breathing the right apex normally gives a slightly bronchovesicular type of sound, presumably because it lies against the trachea.

Breath sounds over a cavity may be amphoric, if the cavity is near the surface and empty, but very often the cavity is entirely missed even during most careful physical examination. Vocal resonance is increased over the lesion, depending directly upon the degree of infiltration of the tissues. Both whispered and spoken voice are transmitted through a diseased better than through a normal lung. Absent breath sounds may mean either spontaneous pneumothorax, massive collapse or a pleuritis effusion. Percussion will differentiate because resonance is increased over the former and absent (flat note) over the latter. Sibilant and sonorous rhonchi (squeaks, wheezes, musical or snoring sounds) usually indicate a nontuberculous affection, such as bronchitis or asthma but are sometimes found in a well established tuberculous lesion also.

DIAGNOSIS OF JUVENILE OR HILUM TUBERCULOSIS

The first infection in a child's lung produces a tubercle in the parenchyma. From this primary tubercle, which may remain quiecsent or heal, there soon develops infection of the treacheobronchial lymph nodes, which receive the lymph from the primary tubercle. Hyperplasia immediately takes place in these lymph nodes, and is soon followed by deposits of calcium. In the juvenile type of tuberculosis the infection is usually confined to the hilum glands (tracheobronchial lymph nodes), so obviously we do not look for physical signs or roentgen ray findings similar to the adult (pulmonary) type.

The determination of hilum tuberculosis, then, is dependent much less on physical examinations than on other things as the following:

1. The roentgen ray is of greatest importance in that it shows enlarged tracheobronchial lymph nodes. Opie and McPhedran of the Phipps Institute have shown that these nodes only appear as opaque shadows when they contain calcium and that this is deposited in them only when they are tuberculous.
2. History of exposure to a case of open tuberculosis.
3. Symptoms. Fatigue, underweight, irritability, frequent colds, moderate or no fever, relative pallor, pleurisy, often with effusion. •(The pleurisy of children is usually painless).
4. Tuberculin test should be positive.
5. Physical examination. This is the least important factor in the examination of the juvenile type. The most experienced examiner must usually depend largely on other factors in determining the presence of tuberculosis.

Percussion often reveals dullness over the hilum region posteriorly but this is of little value, as it is necessarily relative. Auscultation shows increased whisper and voice conduction over masses of tuberculous lymph glands about the hilum, but this too is not dependable. The finding of pleurisy with effusion is very significant as it nearly always means tuberculosis.

If a child has been exposed to a case of open tuberculosis over a period of time, he is certainly infected. But we must not overlook tuberculosis because of a negative family history. An intracutaneous or Mantoux test should be made of all suspicious children to determine if tuberculous infection is present. If the test is positive, the question arises whether we are dealing simply with an infection, or with an active condition, as tuberculous disease. This can usually be determined by careful check on symptoms and roentgen ray examination. The physical examination will sometimes be helpful. Above all, we must not be mislead by the fact that the child looks well.

SPECIAL DIAGNOSIS

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ROENTGEN RAY

Before reading or interpreting lung films, it is necessary thoroughly to understand the normal, or rather the average films of normal individuals at various ages. Practically every scar and calcified area within the lung leave a mark upon the film. As all adults have such markings, they must be recognized for their true value and a careful differentiation made between infections which have healed and therefore are a protection and those which are active and therefore are a danger to the patient. In interpreting chest films it is necessary to understand the physiology of the lung, especially the lymph flow as well as the pathogenesis of tuberculosis; where pulmonary tuberculosis lesions start; how they spread; how the lesions in the child differ from those in the adult; and how each is recorded upon the roentgen ray film. When we have secured a thorough knowledge of the chest films of the various forms of tuberculosis, we have gone far in mastering this difficult subject.

In the incipient stage the roentgen ray study is of undoubted value, definite haziness, peribronchial infiltration and a marked degree of lessened illumination upon coughing and deep inspiration being determined on film and fluoroscopic study. Roentgen ray findings of incipient tuberculosis appear as soon as and at times before the clinical evidence.

Generally a roentgen ray diagnosis of pulmonary tuberculosis should be limited to parenchymal tuberculosis in the adult. It is often unwise to interpret peribronchial tuberculosis and hilum tuberculosis from roentgen ray films only. The reason for this is that we can seldom determine whether certain densities result from healed or from active lesions. Such peribronchial or hilum densities may be roughly considered active in a child and healed in an adult. They can never be considered tuberculous without calcification.

Heavy trunks and hilum shadows result from many pulmonary infections, and as most adults have suffered from pulmonary infections by the tubercle bacillus or some other organism, it is conclusive that practically all adults will show peribronchial thickening, and heavy hilum densities. Peribronchial and hilum tuberculosis exist, but we have no roentgen ray means of deciding when they have clinical significance or when the densities are caused by infection other than tuberculosis.

Dunham states. "The fan is not necessarily a characteristic of tuberculosis. It is characteristic of a limited lung lesion. It is dependent upon the septa of the lung which are arranged so as to divide the lung into numerous cones or triangular pyramids. These limit the extent of many lung lesions as effectively as the lobe limits lobar pneumonia. They form the secondary lobules of the lung. When a lesion with differentiating density developes within one or a number of secondary lobules, it may be recognized upon the film. Such lesions are found in lobular pneumonia, pneumonoconiosis, infarct and tuberculosis. The pathognomonic tuberculous lesion is found when we have two or more of these fans of differing density. These densities may vary from a coarse interweaving to a faint cloud, to fine or coarse studding or to a complete blotting out of the lung structure. Usually tuberculous fans form first in the upper part of the upper lobes."

The early adult lesion is small because tuberculosis spreads very little by continuity, but by the lymph stream and later through the bronchus. The septa are prolongations of the pleura into the lung and they prevent the spread of the lesion beyond their boundaries because they carry the lymph flow away from the adjacent lobules, and, barring cavitation, the tubercle is not known to pass over this boundary. The lesion may invade the adjoining lobule, but it does not pass through the septa.

After fibrous infiltration takes place the roentgen ray findings are almost pathognomonic, particularly for the disease, but also for activity to a slightly lesser degree. Even before mediastinal retraction appears, the evidence of fibrosis is apparent because of the extensive bronchovesicular thickening, the delicate strand-like shadows and the further decrease in radiability. After organization of the fibrous process, with more or less retraction and the appearance of compensatory emphysema in lower lobes, the diagnosis is clear.

The acute cavity does not present a definite, distinct capsule; its configuration is not oval or ring-shaped, but more likely to be irregular; the radiability of its center is the same or less than the surrounding parenchymal shadows; it does not illuminate upon the patient coughing.

The chronic cavity, on the contrary, presents distinctly a fibrous capsule; it is oval or circular in shape; it contains no fluid and illuminates brilliantly upon coughing. Occasionally we find such cavitation containing a small quantity of fluid in its dependent portion, which indicates that drainage has not been perfected. Above the fluid level the radiability is increased, indicating the presence of air.

The roentgen ray findings of miliary tuberculosis are characterized by fine studdings more or less evenly distributed throughout all lobes, but such a picture is not pathognomonic of miliary tuberculosis, for some such films cannot be differentiated from pneumonoconiosis. The roentgen ray study is indispensable in treatment by artificial pneumothorax. The degree of collapse is easily seen and from this one can determine the frequency of refills.

It is hoped that roentgen ray examinations of lungs will be more generally used in connection with the clinician's examination of chest and our general hospitals will adopt a routine roentgen ray study of the chest in all medical cases, and before a general anesthetic is administered in cases of surgery; also that roentgen ray diagnosis of pulmonary tuberculosis will be more generally amplified, so as to state the location, extent and character of the lesions. It is further hoped that the roentgen ray diagnosis will not be accepted blindly by the clinician, but will be used in conjunction with other laboratory findings to interpret and correlate with physical signs, and that whenever possible the postmortem will be used to study the limitations of all these methods which are used to arrive at a diagnosis.

We wish to emphasize that in our opinion no method has ever been found which will give nearly so accurate a picture of lung pathology during life as the roentgen ray film. But the densities upon the film suggesting these pathologic lesions must be studied by the intelligent and trained mind of one who brings his knowledge of the case and the disease to bear, and who frankly interprets his physical findings in the light of abnormal roentgen ray shadows. Thus can a diagnosis be deduced which has real value and a step in advance will have been made.

SPUTUM EXAMINATION

A microscopic study of the unstained sputum should be included in its routine examination, as it reveals structures that are imperfectly or not at all evident in the stained specimen. Also such an examination enables one more intelligently to select a portion for the stained specimen. Such selection by a trained worker is to be preferred to the widely recommended concentration methods.

In examination of the unstained specimen may be found elastic fibers, Curschman's spirals, Charcot-Leyden crystals, pigmented cells, carbon cells, myelin globules, actinomyces bovis (ray fungus), molds, yeasts and animal parasites. Of the various structures above listed, elastic fibers are probably of most importance in relation to tuberculosis of the lung and, although they are found in abscess and gangrene of the lung, in the majority of cases they appear in tuberculosis of the lung. Advanced cases often show great numbers and, when the diagnosis of tuberculosis has once been established, they give a valuable clue to the existence and rate of lung destruction.

One other structure, actinomyces bovis, is to be considered because the clinical picture of actinomycosis is the same as of tuberculosis. This fungus may be detected by careful examination of the sputum, crushing the "sulphur granules" under a coverslip and examining under the microscope.

The stained sputum shows principally the bacteria and cells. A carefully selected portion of the specimen, correctly stained by the Ziehl-Neelson, Gabbet and Pappenheim method, will show the tubercle bacilli when present as slender red rods. Sometimes they are bent and may have a beaded appearance. The appearance of the bacillus is almost always typical, but if there is any doubt, it is probably not the tubercle bacillus.

The number of bacilli found does not indicate the amount of lung involvement, as in some cases far advanced several slides may be examined to find a single bacillus, and the mucoid sputum from an incipient case may contain great numbers. A case having tuberculous cavities may have so few bacilli in the sputum that some of the special sputum concentration methods may be necessary to detect them. The fact that tubercle bacilli are not found in the sputum is no proof that the patient does not have tuberculosis, though their absence in a purulent is of more significance than in a mucoid sputum.

DIFFERENTIAL DIAGNOSIS

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The proper attitude of a physician examining a patient complaining of a chronic pulmonary disease should be that he will either make a positive diagnosis of tuberculosis or rule it out as a cause of the illness. This is the correct procedure because of the prevalence of the disease and its seriousness both to the patient and to those with whom he comes in contact. It is usually the case that positive findings are obtained during the course of a proper examination, if tuberculosis is present, so that a consideration of other diseases is unnecessary. It is plain that the more skilful, careful and complete the examination, the less often it will be necessary to resort to differential diagnosis.

If the evidence found is not conclusive, then it will be necessary to compare the findings with those to be expected in other diseases. Both extrapulmonary and other pulmonary diseases may present signs or symptoms in common with tuberculosis. The extrapulmonary diseases are confused usually because of the presence of symptoms also present in tuberculosis. The differentiation can usually be made because of the fact that most of them present normal lung findings. In those with lung changes the method of production is usually so evident and the signs so different from those of tuberculosis that the recognition is easy.

Thyroid intoxications may present symptoms of fatigue, loss of weight, etc., so that upon taking the history there may be some question as to the illness. The fatigue here may be femoral in character and is frequently present throughout the day. The fatigue in tuberculosis appears later on in the day, as if the result of a lack of endurance, and is rarely present earlier. The loss of weight in thyroid disease is frequently accompanied by a good appetite, while a poor appetite is usual in tuberculosis.

Neurasthenia. The fatigue here occurs frequently early in the morning, even immediately after arising from a good sleep. The lungs appear normal upon examination.

Extrapulmonary tuberculosis. These cases present some of the typical symptoms but give a negative examination of the lungs, and usually some symptom is present pointing to the organ affected.

Hodgkins disease. Fever, malaise and emaciation may be present. On examination the lungs appear negative, but evidence is secured in glandular hypertrophy, leading to a recognition of the true condition.

Mitral stenosis. Frequently there is present expectoration of blood. The routine heart examination, however, will reveal the lesion as the causative factor and the diagnosis is plain, especially in the absence of pulmonary findings.

Diseases of the blood. Occasionally these patients show bloody expectoration. The routine examination of the blood following a negative chest examination leads to diagnosis.

Decompensated heart. The few pulmonary signs should not cause confusion, especially in the presence of the characteristic appearance of a heart failure patient.

PULMONARY DISEASES

Acute. The history is usually sufficient to rule out tuberculosis. However, when resolution is slow there may be some question as to the true nature of the process.

Bronchitis. There are usually no definite percussion findings. Kroenig's isthmi are wide and no dullness or lack of resonance is found even over pulmonary areas showing the presence of rales or rhonchi. Auscultation shows rales fine, nonconsonating, usually not in showers, but fairly widely scattered throughout both lungs. The moist rales are not constant, changing both in numbers and size following prolonged examination. There are usually many sibilant and sonorous rhonchi. The roentgen ray films show no parenchymatous shadows and the sputum remains negative. The examination of the sputum is very important as tuberculosis may manifest itself as a specific bronchitis.

Other acute respiratory infections show signs similar to bronchitis with fewer sibilant and sonorous rhonchi. The moist rales are usually finer but are otherwise differentiated as are those of bronchitis. They may be apical in location, but are more likely to be in the lower half of the lung.

Sinusitis is accompanied frequently by acute respiratory infections which persist as long as the sinuses are untreated. The history, examination of the nose and sinuses by roentgen ray and transillumination, and the fact that they do not yield to ordinary treatment should reveal the cause.

Whooping cough, especially in adults, may early be confused. The sparcity of findings with the severity of the cough should point to the necessity of further diagnostic procedure.

Unresolved pneumonia, especially when apical. If tuberculous, the pathologic changes should appear rather rapidly and are usually progressive, leading to caseation, softening, cavity formation. The sputum should become positive for tubercle bacilli. The fever is rather characteristic in tuberculosis, being hectic in character and accompanied by drenching sweats.

Pleurisy with effusion, while usually tuberculous, must be differentiated from pulmonary disease. The history is usually typical; the findings are basal in location; the percussion note is flat rather than dull; the heart is usually dislocated toward the oppositie side and the breath sounds are usually weakened and not infrequently absent. Rales are inconspicuous and frequently absent.

Chronic pulmonary disease. Even characteristic findings are not to be depended upon. One must remember the possibility of a secondary infection with tuberculosis upon an old chronic lesion. Consequently one is safe in his diagnosis only after repeated search has been made for such a lesion. Such an occurrence always seems likely, if previously afebrile patients show an elevation of temperature, and particularly if a sudden and marked loss of weight is experienced.

Pneumonoconiosis is particularly apt to show a secondary infection with tuberculosis. The diagnosis is brought to attention by the history of occupation. Early the roentgen ray gives the best aid in differentiation; the lesions are discrete, without apparent inflammatory reactions, and are present in the center zones of the lungs. Late cases show dyspnea out of proportion to pulmonary changes, emphysema, and percussion changes out of proportion to the auscultatory. Over an area of marked dullness the rales may be very few and fine, and such a finding should immediately call one's attention to this possibility.

Emphysema. The barrel shaped chest, the use of the accessory neck muscles of respiration, the wide interspaces, the depressed diaphragm and the marked dyspnea are typical. The percussion note behind is usually markedly deficient in resonance, with a high pitch and typically tympanic in front. Added to these findings, the weakened respiratory murmur and the absence of moist typical rales should point to the diagnosis.

Chronic bronchitis. The lesions are usually bilateral and most prominent in the bases. The auscultatory findings are out of proportion to those of percussion, and the general condition of the patient remains good for the usually wide involvement present. The rales are not consonating, frequently bubbling in character and usually do not reach the apices. There are frequently many sibilant rhonchi.

Bronchial asthma. The history is usually so typical that no difficulty is experienced in reaching a diagnosis. There is marked expiratory dyspnea with many sibilant and sonorous rhonchi. The lesion is widespread and moist rales throughout are common.

Bronchiectasis. The history is so typical that a diagnosis can be made from that alone. Other identifying characteristics are the great clubbing of fingers and toes, the bubbling rales usually confined to one base, although they may be present on both sides.

Pulmonary new growths are to be considered, when percussion signs are greatly in preponderance over auscultatory, when pain is constant and severe, when there is retraction of chest over the lesion, with a dislocation of the mediastinum and heart toward the affected side, with great dyspnea and great pleural involvement with effusion. There are many types, pulmonary, pleural, bronchial. The best aid comes in the roentgen ray study. The bronchial tumors frequently give signs of obstruction over the area of lung supplied by the bronchus. There may also be signs of bronchiectasis.

Nontuberculous cirrhosis usually follows old thickened pleura, asthma, etc. They give all the signs of fibroid phthisis and must be diagnosed only after long search for the tubercle bacilli has been unsuccessful.

Syphilis. The greatest aid is found in the roentgen ray examination. It is usually diagnosed when a positive Wassermann is found, accompanying a lesion not characteristic of tuberculosis.

Higher bacteria, yeast, etc. The diagnosis is made by finding the organism in the sputum.

PROPHYLAXIS

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Before discussing the prophylaxis of tuberculosis let us briefly consider infection and immunity. The whole problem of tuberculosis is based on immunity which may be natural or acquired and there is sufficient proof to warrant belief in its heredity. In tuberculosis all immunity is relative and, while a high degree can be demonstrated in infected animals, no complete immunity is known.

Every child is born free from tuberculosis, notwithstanding that one or both parents may be tuberculous. The disease is not inherited. Tuberculous infection comes after birth and usually from direct contact. If the child contacts an open case during its first three years of life, the danger is great and a large percentage die of acute tuberculosis. The child who survives has likely received a massive dose and is very liable to develop chronic pulmonary tuberculosis in adult life, but by virtue of this infection acquires a relative degree of immunity which will prevent exogenous infection.

Tuberculous infection is beneficial for most people, because of the protective immunity engendered, but massive infections are to be avoided. Approximately 50 per cent of all children are infected before ten years of age, and at twenty-one practically everyone living in civilized communities has become tuberculized.

The distinction between a first infection large enough to cause acute tuberculosis, from which recovery rarely takes place, and a second infection after tuberculization must be clearly understood. Chronic pulmonary tuberculosis can occur only in the person already infected and, while it is possible that it may occur from exogenous, it nearly always occurs from endogenous infection. In most cases of chronic pulmonary tuberculosis in adult life there has been a massive infection in early childhood. In later life the general resistance becomes lowered for some reason and the degree of immunity decreases to such an extent that the disease occurs by endogenous infection. Tuberculization means immunization.

Modern civilization brings with it tuberculization. Study of the tuberculosis of the Orient leads to the suspicion that good hygiene, however important and highly to be desired it may be, is of distinctly minor importance in comparison with an optimal tuberculization. The consumptive, much to be dreaded as he is at close quarters by the uninfected, is indispensable in the present era because he unwittingly provides for the immunization which prevents our race from perishing as so many other races have perished, when thrust unprepared into the midst of infection.

Observations of many writers confirm our belief in an inherited or racial immunity. The high degree of immunity enjoyed by the jewish race, which has been exposed to tuberculosis for many generations, as compared with the very low degree of immunity of the Indian or negro, exposed for only a few generations, further suggests that immunity is inherited. The almost universal decline of tuberculosis in countries or communities where it was formerly epidemic and the decreased incidence of this disease in racial stocks that have been exposed longer to urbanization have in a measure been due to an increasing immunity acquired by heredity.

Children of tuberculous parents do not inherit even a predisposition to the disease, but an increased immunity to it instead. There remains, of course, the peril of contact with their tuberculous parents after birth. Facts of childhood infection show that the presence of an advanced consumptive in the household often leads to fatal infection. Influence of bad hygienic conditions, lowering the vitality, hence the inability to resist, together with the frequent repetition of infection, may lead to fatal infection. In infants a large infection or repeated small infections may lead to manifest tuberculosis even under the best hygienic conditions.

Prevention of infection in infants. Every case of infection must come from a preceding case of tuberculosis. Realizing that every child is born free from tuberculosis, even though the mother may be an advanced consumptive, a child born of a tuberculous mother should immediately be placed in an environment free from the disease.

The first step in tuberculous prophylaxis is the protection of the baby. When we realize that every baby that is exposed to contact either dies of acute tuberculosis, or if it survives through infancy has almost certainly received a massive dose, making it a potential case of chronic pulmonary tuberculosis, and that every case of phthisis will probably infect ten others, we will appreciate that tuberculosis is not only an individual, but also a family and state problem.

The infant under three must be protected against tuberculosis at all costs. In families where there is no tuberculosis, this is a simple matter. In families where it is present, the indications are clear; either the tuberculous person or the infant must be removed. Very few infants survive when reared by a tuberculous mother. Three-fourths of the babies born during the last year of life of a tuberculous mother die.

Prevention of tuberculosis in the child over three years of age. When the child begins to walk and comes in contact with many people, prevention is not so simple. Fortunately infection after three is usualy relatively harmless. Either no disease occurs or tracheobronchial adenopathy results, which is rarely serious. Between the ages of three and fifteen the mortality rates from tuberculosis are comparatively low, notwithstanding that 90 per cent of all tuberculous infection takes place during this period. It is impossible to prevent infection after three years of age, owing to the ubiquity of the tubercle bacillus. The important problem is to guard the young child against massive infection. Every effort should be made to keep the nontuberculized child from open cases of tuberculosis. The danger from bovine infection is slight. Only a very small percentage of infant infection is due to this, and it can easily be avoided if milk is properly pasteurized.

Particular attention should be paid to the child's weight and to fatigue. Investigation should immediately be made to ascertain the cause. Tonsils, teeth, adenoids, etc. should be considered and, when every known focus of infection has been dealt with and symptoms still persist, a strict preventorium regime should be instituted. In this Northwest there is a decided need for preventoria and open air schools. Underweight children should not be permitted to continue in the regular classes at school, but put in special classes for underweight and underaverage children, where proper extra rest periods and open air sessions can be conducted.

If we are to prevent tuberculosis we must be able to reocgnize it early. Until comparatively lately very little special teaching in tuberculosis has been given in medical colleges. Every interne should serve a few months in a tuberculosis sanatorium. Much credit is due Seattle's municipal sanatorium at Firland, for the opportunity afforded the internes of the City Hospital. Throughout the state I have met many of these young physicians and have been impressed by the evidence of their ability to diagnose early tuberculosis. It is hoped that with extended education we may contact fewer patients with advanced tuberculosis who have been treated for other conditions. We regret that we see too many cases of advanced tuberculosis which should have been diagnosed earlier.

Only about 10 per cent of admissions to sanatoria are early cases. This and the fact that 80 per cent of early cases properly treated recover emphasize the importance of early diagnosis. There may be active tuberculosis without physical signs and the roentgen ray may fail to disclose the site of the lesion, but there is no active tuberculosis without constitutional symptoms. Hamburger says, "think of tuberculosis in every case in which no other diagnosis can be made."

The family physician must be able to detect tuberculosis in its earliest stage and we must depend largely on him for proper education of his tuberculous patient. Much credit is due our Washington Tuberculosis Association and the various county leagues for their educational work, but a closer connection and better understanding between the local physicians and these workers is most essential. The clinics which are held throughout the state should be encouraged by the medical profession. Local physicians should cooperate and assist with these clinics. There are too many physicians who actually oppose them, although they are invariably benefited.

The whole problem of prevention in tuberculosis resolves itself into the question of education. As the late Dr. Trudeau, founder of the first tuberculosis sanatorium in this country, said, "if every man and woman in the United States were familiar with the manner in which tuberculosis is communicated and the simple means necessary for their protection, not only might we expect a great diminution in the death rate of the disease, but the people would soon demand and easily obtain effective legislation for its prevention and control."

TREATMENT

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In no disease unless it be diabetes is cooperation between physician and patient more important than in the treatment of tuberculosis. While many patients will need special modes of treatment, such as artificial pneumothorax, thoracoplasty, etc., the vast majority will require what is known as sanatorium or the rest hygienic treatment.

MODE OF LIFE

Bushell has said "that the cure of tuberculosis is not medicine, but a mode of life," meaning that the patient must learn a new method of living, if he is to get well and stay well. A mode of life must be followed that will teach him to live within his limitations and yet be able to do some portion of his work, or as Krause puts it, "teach him to live with tuberculosis," for this disease is rarely cured in the sense that we use cure in regard to other affections. Make no mistake. Even a working cure, an arrest of the disease, requires a very long time and most physicians underestimate the length of time. Many will tell their patients that all they need is three to six months of rest treatment. It is probably true that only very early cases (these are rare) may achieve a real arrest in this short time.

REST

All cases should begin the treatment with rest in bed. This for the purpose of lessening toxemia and the work the diseased lung has to do. The more complete the rest is at first the better, usually described as "absolute," that is, as complete rest as is given a typhoid patient.

Ideally no exertion should be made, realizing that anything that hurries the circulation or respiration is not rest. Hence no exciting reading, no bathroom privileges, very few visitors, as talking is exercise for the lung and too much talk is harmful for sick lung as well as irritated larynx. Rest in bed should continue a minimum of three months, longer if symptoms and physical signs do not show marked retrogression. Temperature and pulse rates are indices of toxemia, but extent and activity of lung lesions are factors to be considered when discontinuance of bed rest is considered.

EXERCISE

Bed rest is discontinued gradually by first sitting up in bed, then later in reclining chair and the time gradually increased. When a patient can spend four hours on a reclining chair, he may be allowed bathroom privileges and may also be allowed to walk to and from meals, provided there is no stair climbing. When he can spend ten hours on reclining chair, graduated walks should be carefully prescribed by his physician. The walks should be only a few feet at first and at the rate of two miles an hour. Walks are gradually lengthened as conditions (toxemia and physical signs) warrant.

From start to end of treatment, and in some cases forever after, the patient must be taught to observe a regular rest hour daily, usually from 1 to 3 p.m., during which he undresses and goes to bed and must rest undisturbed; no talking, no reading, nothing but relaxation and rest. In some very good institutions there are two rest hours daily, one in the morning and one in the afternoon.

Even when on exercise the patient must continue to observe his rest hours. He should also be taught to rest on reclining chair before and after meals. The successful employment of the graduated exercise system requires that every minute of the patient's day is regulated. He either has prescribed rest or prescribed exercise to carry out. Any toxic reaction to exercise is shown by elevated temperature or pulse rate or other symptoms, and calls for more rest and less exercise for a few days. When the symptoms subside, the exercise may again be increased and the rest decreased.

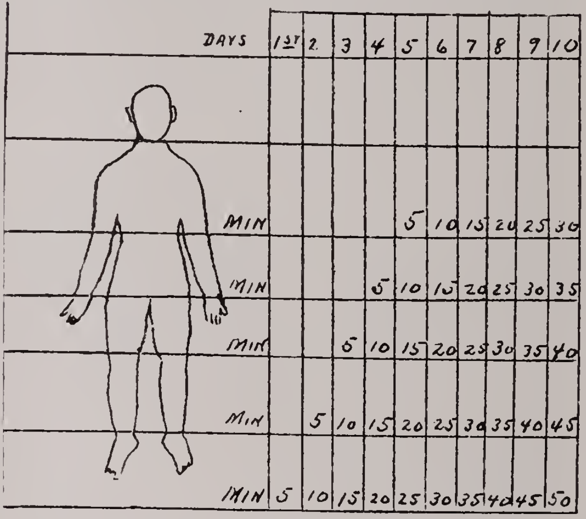
Much depends on the close supervision of the patient's rest and exercise, either by the physician or nurse. Rest never does any harm. Exercise, if ordered unwisely or increased too rapidly, may in a very short time undo what months of rest have accomplished. Careful supervision and instruction by the physician must have as its object teaching the patient how to direct his own destiny when he is discharged from treatment. The patient who cheats, cheats himself.

DIET

For the uncomplicated case no special diet is necessary. A good nourishing diet, containing all the essential food elements, including vitamines and mineral salts, served attractively is all that is required. However, the patient probably has prejudices in regard to diet that will need correction. He will probably have to be encouraged to eat certain foods he has previously avoided, and also be taught to avoid eating excessively of foods that he particularly likes. The diet should be a mixed and varied one, always containing milk, fruit and fresh vegetables. There is no object in forced feeding. No good purpose is served by putting on weight rapidly. On the contrary, it may be harmful. Too rapid a gain in weight means extra work for a sick lung. Also too much and too rich food means an upset stomach.

FRESH AIR

The more nearly open air conditions are approached (the patient's comfort considered) the better. Twenty-four hours a day in the open air (on sleeping porch) is not too much. It is easier for the sick lung to use fresh than vitiated air, that is, fresh air rests the sick lung. The sleeping porch not too far removed from bathroom and dining room is ideal. The tent in the yard, while satisfactory for the ambulant patient, is not advisable for one on absolute bed rest, as the amount of work necessary to care for him properly is excessive. A room in the house with cross ventilation is better for the bed-rest patient.



DAYS	1st	2	3	4	5	6	7	8	9	10
MIN					5	10	15	20	25	30
MIN				5	10	15	20	25	30	35
MIN			5	10	15	20	25	30	35	40
MIN		5	10	15	20	25	30	35	40	45
MIN	5	10	15	20	25	30	35	40	45	50

The Progression by Which the Patient Is Exposed to the Sun.

From the 10th to the 15th day, increase according to the same scale.

From the 15th day all the previously exposed portions of the body should receive the same amount of insolation as the longest exposed part, increasing the time 5 minutes daily until a bath of from 3 to 4 hours is taken.

SUN TREATMENT

This is a valuable method in selected cases, when carefully given. Many physicians advise their patients "to sit out in the sun and get all they can of it." This usually results in elevated temperature, increased pulse rate and other symptoms of activity. Too much sun acts like an overdose of tuberculin.

Sun treatment should not be given to acute or exudative cases but is a valuable treatment in chronic afebrile cases, if properly given in graduated doses. It is given to the bare body, beginning the exposure gradually with the feet exposed for five minutes the first day, then increased as per the following diagram, remembering that the head is never to be exposed to the sun. The Alpine or ultraviolet light may be used, where sunlight is not available.

SANATORIUM HOME TREATMENT

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The sanatorium properly conducted offers the ideal conditions for the treatment of tuberculosis. It is especially adapted to carrying out measures and methods which have proved to be effectual in the management of this disease. In an institution the close association between physician and patient gives an opportunity for an intimate study of each case, with the result that appropriate therapeutic measures can be applied. This close association establishes the patient's confidence and cooperation which are so essential in his recovery to health. The success of institutional treatment has been so evident that every physician who is called upon to treat patients in their homes should have a definite understanding of sanatorium care. With this knowledge he can to a great extent adopt sanatorium methods while treating the home patient.

The primary duty of the physician is frankness. The patient, after having his case carefully worked out, should be informed as to the extent of disease and probable duration of treatment, so that he will take the situation seriously enough to attend strictly to the business of getting well. Next, the patient must be taught the essential factors about tuberculosis, namely, its etiology, source and methods of infection, predisposition, prevention, symptoms, diagnosis, how tuberculosis heals, treatment and after care.

Most important in the group, which the patient must thoroughly understand in order to fully cooperate, is "how tuberculosis heals." He must be made to realize the bacilli are not destroyed, as in other diseases, but gradually walled off from the surrounding tissues. When he grasps this idea, he can readily recognize the danger to the delicate new forming protective tissue from sudden mental and physical strain, and is thus willing to follow out the regulations necessary to ensure a good recovery.

Rest. This is the most important measure in the treatment of tuberculosis and in most cases is carried out conscientiously only where the patient is under close supervision. Rest as suggested for the treatment of this disease does not mean hiking into the mountains, vacationing at a summer camp, on an auto trip or merely lying around. It means rest of muscles, relaxation of nerves and mental composure which can only be attained by absolute rest in bed twenty-four hours of the day.

Few people know how to rest. Each patient must learn to relax mentally and physically and certain rules should be followed, namely, rest periods, preferably one-half hour before meals and one hour after meals, during which time he must not be disturbed. There should be certain hours of the day when visitors are allowed, and if need be, a limit to the number of visitors and length of stay. There should be no undue laughing, talking, unnecessary coughing or hilarity. All outside noises, especially at night and at rest periods, should be controlled as much as possible.

Exercise at a certain stage in the treatment of tuberculosis when carefully supervised is a stimulation to the healing process. The patient who understands nature's method of healing appreciates the danger of sudden or overexertion. He must be taught that every movement in bed or out must be slow and deliberate. For instance, in going to the bathroom he must rise cautiously from his bed, walk slowly and waste no time before returning. When he starts sitting up and walking he must adhere to his schedule, rain or shine. While walking he must move slowly, sit down frequently and never exercise to the point of fatigue.

If there be a return of the symptoms he should go to bed and notify the physician. These precautionary measures are not only to guard against damage to the healing process, but to impress conservation of energy on the subconscious mind of the patient. These measures are so firmly drilled into him under sanatorium treatment that when he returns home he will intelligently and automatically follow his physician's advice. Unless this is firmly fixed in his mind during treatment, he will not conduct himself after recovery in a manner conducive to permanent health.

Food. In no other disease does the outcome depend so much on keeping the gastrointestinal tract in good condition. Teach the value of a balanced diet, the harm that results from forced feeding, especially of cream, milk and eggs, and from fads in diet, irregular eating and indulging in too much sweets, fruits and pastries. The tuberculous patient should eat just sufficient to gain slowly and, when the correct weight is established, just enough to maintain that weight. Every effort must be made to keep him in an optimistic frame of mind, for this reacts favorably on the digestion.

Fresh air. The real benefit of fresh air is secured when the air is in motion, stimulating the surface of the body. This can be secured by cross-ventilation without danger of drafts. The patient should know that artificial heat lessens resistance and congests the mucous membranes of the respiratory tract, thus predisposing to colds. Unless he realizes the seriousness of this, he will spend much of his time around the stove or radiators during the winter.

Clothing. The patient should wear enough to keep warm but no more. Too much clothing interferes with the tonic effect of the circulating air. Insufficient clothing produces a strain on the system in order to keep up body temperature and creates a tendency to respiratory complications.

Night garments should be of heavy outing flannel with sleeves, and bed covers warm. Have socks and slippers handy when getting out of bed, heavy wraps or blankets while sitting up. When walking in the winter heavy shoes, rubbers and rain coat are essential. In general, he must keep warm and dry all the time and yet not overload himself with clothes and covers.

Symptomatic treatment. A patient educated regarding tuberculosis soon learns the importance of the various symptoms and does not become unduly alarmed over trifling matters or careless regarding those of serious importance. In an institution he is in constant touch with the medical and nursing staff who can relieve him of many worries and anxieties. He is taught the importance of voluntary control of cough, dangers of cough mixtures, what to do in case of hemorrhage, pleurisy, fever, laryngitis, acute colds and gastrointestinal disturbances. He learns the chief causes of constipation, the bane of the tuberculous patient, and that it must be controlled as far as possible by hygienic dietetic living; that laxatives and cathartics have little place in the treatment of a disease, where the intestinal tract plays such a vital part. We do not wish patients to become introspective, but if they have some knowledge regarding the meaning of these various symptoms they are not going to become unduly alarmed.

Mental attitude. The outcome of tuberculosis in many cases depends upon the patient's state of mind. In an institution the sympathetic understanding of the physician, nurses and fellow patients is a vital factor in keeping up the individual's morale. He has freedom from home cares, worries and tactless but well meaning friends. Every effort is made to keep him in a cheerful mood. This requires close and frequent observation of the patient, pleasant surroundings and those in charge to be thoughtful, tactful but firm. He must be instilled with the thought he is going to get well and with this idea firmly implanted the battle is half won.

I have tried to bring out some of the essential points in sanatorium treatment which are instrumental in securing good results. If the physician will apply these principles, as far as possible, to the care of the home patient he should secure a good outcome. The physician who has not the time or the understanding to devote to this educational work would do well to place his patients in a sanatorium for a period of training so that when they return home they can intelligently follow his advice.

COMPLICATIONS

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The complications of pulmonary tuberculosis are as varied as the organs of the body. However, only those commonly met with as complications in course will be discussed in this paper. Pulmonary tuberculosis may be complicated with some associated or intercurrent disease, for example, syphilis or diabetes. Such complications will not be considered in this brief resume.

Hemoptysis may be slight or severe, occur but once or be often repeated. The slighter forms, classed properly as hemoptysis or blood spitting, call for careful investigation to determine origin, which may be anywhere in respiratory tract. Assuming, however, that the cause is probably tuberculosis of the lung, the treatment should be rest in bed until several days (usually seven) pass without blood spitting. Then the patient should be allowed up, if other conditions warrant. During the period of bed rest, laxatives or even salines may be necessary. The diet should be light.

The more severe grades of blood spitting are usually called pulmonary hemorrhage. The amount of blood lost will depend on size of vessel ruptured. Such hemorrhages usually occur in cases of cavitation, particularly the chronic fibrocaseous type.

Again the treatment is rest in bed. We think best in the supine position, as the head may be readily turned without effort to spill the blood into the emesis basin which should be beside patient's head. A nurse or attendant should be constantly present. The patient must be reassured, likewise the relatives, that quiet and rest will do more to stop the hemorrhage than the fussy attentions so often proffered. Cough should be reduced to a minimum. Sometimes a pinch of salt, a piece of ice or simple lozenges held in mouth will serve. Cold compresses about throat and chest or even ice bag will promote comfort and relaxation, although directly, of course, they do not influence the hemorrhage. Sedatives may be necessary to control cough, but are best avoided if possible.

Calcium lactate may be given, especially to those patients showing tendency to repeated hemorrhage and if the blood calcium is low. Fibrogen or thromboplastin may be used and sometimes seem to be useful, but more often disappoint. Gentle salines will be necessary. Diet should be light or liquid, cold rather than hot. Extremities may be bandaged to prevent venous return.

Most hemorrhages cease under above treatment, but probably not because of it. Cessation is likely brought about by clots forming in the cavity which finally close and compress the bleeding point. For severe hemorrhage or frequently repeated hemorrhage, artificial pneumothorax is the treatment in those cases where it can be given, and if the bleeding lung can be recognized. Often adhesions of lung to chest wall prevent the use of pneumothorax. In these cases phrenicectomy and possibly thorocoplasty will have to be considered where hemorrhage is frequently repeated.

The recognition of which lung is bleeding is not always easy. The side with most bubbling rales may be due to blood overflowing into the better, more active lung. If the side of old lesion with cavitation is known, the hemorrhage is probably from that lung. Sometimes the patient at the start of the hemorrhage will be able to locate "a hot spot" in the lung, which sometimes indicates the side from which the bleeding is coming.

Laryngeal tuberculosis may be a most distressing and painful complication, making even the swallowing of saliva an agony. The treatment here is largely palliative by direct application or insufflation of local anesthetics to the point of trouble. Such application is usually made before meals so the patient may swallow with a fair degree of comfort. All laryngeal cases should have the advice and care of a competent laryngologist.

Applications are many, some occasionally useful; for example, formalin, lactic acid, chaulmoogra oil, scarlet red, etc. In suitable cases excision of the epiglottis has been done with benefit. Ultraviolet light (Kromayer) is sometimes useful. Sunlight reflected by metal mirrors can be used by the patient himself. Injection of the superior laryngeal nerve with alcohol sometimes gives relief for many days, but the nerve is difficult to locate with a needle. If under the proper treatment the lung condition improves, the laryngeal does also. All cases of tuberculosis of the larynx should be put on silence (vocal rest) for long periods. This last point is the most important of all.

Intestinal tuberculosis. Until comparatively recently this was considered a late or terminal symptom. We now know, thanks to the careful work of Lawrason Brown and coworkers, that it occurs rather frequently in the so-called earlier cases and that the prognosis is not necessarily unfavorable.

The symptoms are so often indefinite and uncertain that we believe all pulmonary cases should have gastrointestinal roentgen rays at beginning of treatment, and at six month intervals while under treatment for the pulmonary condition. The treatment is rest; the more bed rest the better. A nonirritating diet, such as the Alvarez smooth diet and graduated ultraviolet light treatment to entire body, either by air cooled lamp or natural sunlight given with proper precautions, seem to be of assistance.

Calcium lactate has been given intravenously with relief of symptoms when present. Glucocalcium is also used and is less irritating. Calcium lactate may be used by mouth and is best given in large doses on the empty stomach, preferably before breakfast.

Pleurisy with effusion. If of tuberculous origin, and most of them are, these cases will require the rest hygienic treatment, and usually some special treatment of the effusion. There should ordinarily be no hurry about the removal of fluid, unless it is producing unfavorable symptoms.

The rules of Bowditch are as good now as when written in 1852: Aspirate (1) when the chest is full in either acute or chronic cases, (2) when alarming dyspnea is present, even if the quantity of fluid is small, (3) in all cases when absorption is slow, (4) and always when the fluid reaches spine of scapula behind or third rib in front. It is usually not advisable to withdraw all the fluid at the first aspiration, unless it is replaced by filtered air as it is withdrawn. The replacement of fluid by air is good treatment, but the pneumothorax so induced should be maintained for a long time, following the usual method of continuing an artificial pneumothorax.

ARTIFICIAL PNEUMOTHORAX

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Collapsing the diseased lung by the introduction of air into the pleural space has in the last fifteen years become a regular part of the therapeutic procedures of the tuberculous sanatorium. Yet it holds little interest for the general practitioner, because he realizes it is generally inexpedient for him to use it.

The use of this logical, practical and life-saving procedure requires a thorough knowledge of the case in hand, repeated roentgen ray examinations while the lung is being held down, and a lot of experience with the technic of inducing pneumothorax. It is usually possible, because of the presence of various tuberculous institutions about the state, to give suitable cases the opportunity of pneumothorax, and in many such cases this one treatment often makes the difference between life and death.

PURPOSE

The purpose of artificial pneumothorax (lung compression, "gas") is to put the bad lung at rest. Just as rest of any part of the body facilitates repair, so local rest of the lung is invaluable. In extensive involvement and in cases of caseation or cavity, the compression resulting from lung collapse is decidedly favorable, frequently resulting promptly in recession of fever, diminution of cough and sputum and often absence of bacilli.

It is necessary to repeat the procedure frequently (once a week or less in accordance with the study of the case), and to continue compression over a period of one to three years. Many patients are thereby enabled to resume their work when conditions warrant, and continue their inflations without inconvenience. A considerable percentage of individuals with a quite hopeless outlook may be promptly converted into cases with every hope of arrestment.

INDICATIONS

Artificial pneumothorax is indicated in all cases of pulmonary tuberculosis in which we find the following conditions.

1. One good lung or only slight involvement.
2. A progressive or stationary active lesion in the other lung.
3. Caseation or cavity, even though patient appears to be doing fairly well, because such a case is approaching trouble and it should be forestalled.
4. Hemoptysis.

CONTRAINDICATIONS

1. Extensive involvement of both lungs.
2. Terminal cases or those profoundly ill.
3. Dyspnea.
4. When failure to improve is due to conditions outside the chest.

In many cases it is impossible to get any air into the pleural space because of adhesions.

DANGERS

There is considerable danger associated with artificial pneumothorax in inexperienced hands, this being due chiefly to undeveloped judgment in selection of cases, and to the unavoidably clumsy technic of the beginner. Air embolism has caused death during the procedure. The experience of those thoroughly familiar with this work, who have had extensive practice in lung compression, indicates that danger is negligible.

The apparatus consists of two 1000 or 1500 c.c. bottles with rubber stoppers, having two apertures. One bottle is filled with sterile water, the other is empty. By means of rubber tube connections, the water syphons from the one bottle to the other, forcing the air out from the second bottle through a tube connected to the needle which is in the pleural space. A manometer, which may be turned on and off by means of a valve or two-way stop-cock, shows at any time the degree of negative or positive pressure within the pleural space.

When the situation demands lung compression and artificial pneumothorax is impossible because of pleuritic adhesions, other methods must be resorted to, such as phrenicectomy and thoracoplasty.

SURGERY OF PULMONARY TUBERCULOSIS

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It is only in comparatively recent years that operations have been developed in the cure of pulmonary tuberculosis. Especially has this country been backward in applying the various methods. Since shortly before the war, however, progress has been quite rapid, and surgery is being freely used where indicated.

There are a number of surgical procedures and methods, all of which aim to accomplish the same object, compression of the diseased lung. These include severing of adhesions through a thoracoscope, paralysis of one-half the diaphragm, collapsing the chest wall through removal of ribs, pneumolysis, apicolysis, etc. Here it will suffice to describe briefly the two chief methods of obtaining compression, paralysis of the hemidiaphragm and thoracoplasty.

The indications for phrenicectomy, or removal of the phrenic nerve, are much broader than those for thoracoplasty. The operation in itself is relatively a minor one, produces no shock, and while it permanently paralyzes the hemidiaphragm, it does not reduce the function of the affected lung more than ten to forty per cent, whereas in thoracoplasty the diseased side is permanently put out of commission.

Phrenicectomy may be performed under local anesthesia, with practically no pain. The paralysis of the hemidiaphragm is immediate, and it assumes a higher position in the chest. Later, as the muscle atrophies, it rises still further, and may continue to ascend for a number of weeks. The lung at once is partially put at rest, and as the diaphragm rises it causes a variable amount of compression, usually most marked at the base, but extending in some degree to the entire organ; and where healing with scar tissue is taking place, the action often tends to be selective in that the most diseased portion shows the greatest shrinkage.

It should seldom be employed alone for curative effect, but usually in combination with some other procedure. In basilar tuberculosis it is ideal, and frequently all that is necessary. As an aid to artificial pneumothorax it is valuable, and the combination may make thoracoplasty unnecessary in some cases. In cases of persistent hemoptysis which pneumothorax does not control, or in which pneumothorax can not be used, it is usually effective. Supplementary to a pneumothorax which is entirely satisfactory, it is often of benefit in several respects.

When an extensively diseased lung has been held compressed for a considerable period with pneumothorax, and it is decided to allow reexpansion, there is always danger of lighting up the disease through tearing open healed areas, for the shrunken lung is expected to fill the entire space it formerly occupied. By phrenicectomy this space is considerably reduced. The operation may also be of assistance in lessening the frequency of refills necessary, even to doubling the interval, and in case the patient abandons the pneumothorax before treatment is completed, the higher diaphragm is of benefit in holding some of the ground gained.

It is stated that there are fewer and smaller effusions with the combination of the procedures. This is important when one considers that in approximately fifty per cent of artificial pneumothorax cases there is an effusion of some extent. Prior to thoracoplasty I think it should be used in all cases as a partial test of the opposite lung, and as a means of preventing postoperative pneumonia.

In addition it increases the effect of a thoracoplasty, and is of value at times in improving the condition of a patient not quite equal to a collapsing operation. It decreases the number of ribs one must resect. It may occasionally be used for patients on whom nothing else can be done, and at

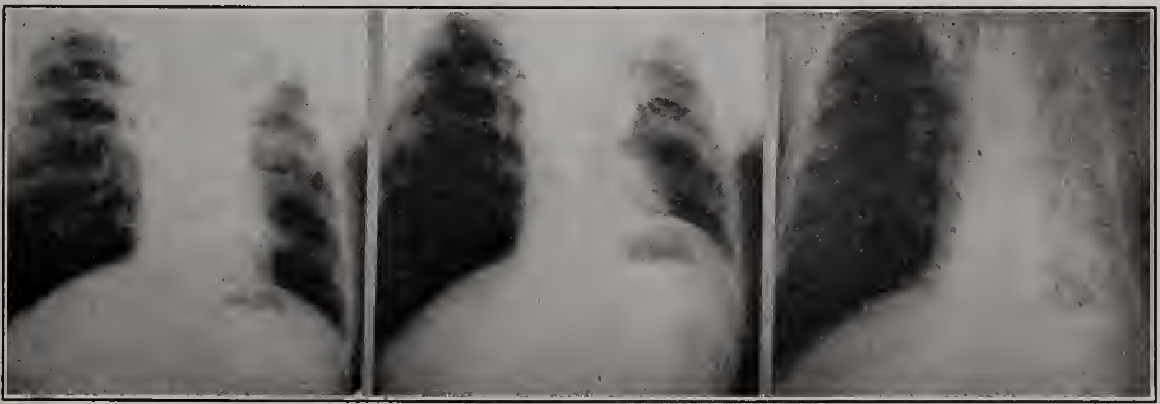

Fig. 1. Fig. 2. Fig. 3.

Fig. 1. J. H. Showing case before operation. Fig. 2, Same after phrenectomy, illustrating marked rise of left diaphragm. Fig. 3. After completion of thoracoplasties.

times avoids an otherwise certainly fatal termination.

Thoracoplasty is the substitute for pneumothorax in those cases where adhesions make the latter unsatisfactory or impossible. Segments of the upper seven to eleven ribs are resected close to the spine, resulting in a collapsing of the chest wall and compression of the lung, sufficient to bring about cure or great improvement in most cases. As the ribs regenerate, the bony bridging from one to another results in complete immobility on that side.

The indications are primarily those which one might expect. Where pneumothorax cannot be used because of adhesions or in those instances in which compression is incomplete, we have a means of doing what otherwise would be impossible. When effusion is present after pneumothorax and empyema threatens, it may prevent long disability and save life. The occasional patient, who will not or can not have refills of air, is suitable for thoracoplasty, as is also the case in which artificial pneuomorthorax and phrenicectomy are insufficient to control repeated hemorrhage.

Thoracoplasty should be confined, however, almost entirely to those patients in whom the disease is essentially unilateral, and where the opposite lung is either apparently free from infection, or where the disease has become improved and arrested through continued medical management. The fibrotic type, with or without cavities, is particularly suitable, while the pneumonic form is unfavorable. The case should be in reasonably good general condition, and not one which is slipping fast in spite of all the ordinary measures.

It is well to emphasize that good medical management is of just as much importance during the period of surgical convalescence as before operation, and close cooperation must exist between the internist and surgeon. One is not removing a diseased organ, but simply producing conditions favorable to healing. This healing requires months for its completion.

Cases for surgery must be carefully selected, and as a rule they are patients whose pulmonary condition precludes any hope of ultimate recovery without such aid. However, nothing can be more harmful than indiscriminate surgery in otherwise hopeless cases which are not proper subjects. It brings into disrepute a method of treatment which is being constantly more widely applied, and the results of which are most encouraging.

TREATMENT OF PULMONARY ABSCESS*

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This discussion will confine itself to those pulmonary abscesses, usually single, that follow operations, acute respiratory infections or aspiration of infectious material, and will leave out of consideration the multiple, often miliary, abscesses that form an incident in the course of generalized sepsis or pyemia.

Whether lung abscess is of embolic origin, or the result of aspiration is a theme which has exercised numerous investigators for many years. It is probable that both embolism and suppuration play a role.

The terms gangrene and abscess have been used indiscriminately; older authors were used to call foul suppurations gangrene and inoffensive ones abscess. It is clear enough that this is misleading, for a patient will often in the course of his disease have sputum which is alternately foul and again nonodorous. Were one to use the words gangrene and abscess in the same sense as they are used elsewhere, suppurations arising after death of tissue, after sequestration of portions of the lung, would be called gangrene, and those in which the lung suppurates and liquefies, abscess. Gangrene, then, would be the result of impairment of the blood supply of part of the lung, abscess not necessarily so.

Kline of Cleveland, to whom we owe valuable work on this subject, makes gangrene synonymous with the infections caused by Vincent's organisms. Differentiation is useful, for abscess and gangrene differ both in prognosis and treatment. Most suppurations that we are called upon to treat surgically may properly be termed gangrene. Not only is the sputum foul, at times at least, but the suppurating focus, when opened, regularly contains visible lung sequestra, horribly foul, grey or putty colored, soft and speckled with blackish shreds of anthracotic lung. The sequestra contain elastic fibres and recognizable remnants of lung tissue.

The cavities are usually single, although often so sinuous and branching that they may be difficult to open thoroughly; more rarely one finds two or more separate abscesses, one original one and others secondary. The secondary ones, I imagine, are the result of fits of coughing, which spray pus

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* Read before the Seventh Annual Meeting of Pacific Northwest Medical Association. Tacoma, Wash., July 5-7, 1928.

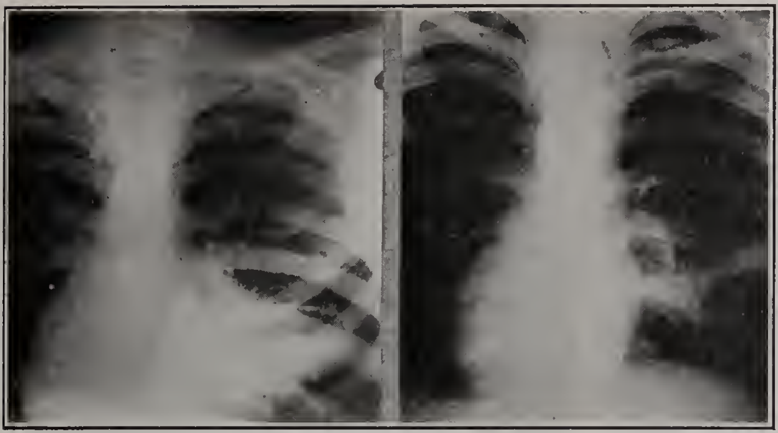

Fig. 1. Abscess with large cavity after herniotomy. Healed spontaneously.

from the abscess into other parts of the lung. We can see the mechanism of this dispersion under the fluoroscope, when the patient coughs after injection of lipiodol into the bronchi.

An abscess may break through into a bronchus; its contents may be coughed out, and it may heal without leaving a trace. It may become quiescent, encapsulate itself and the fever and toxicity caused by it abate, temporarily at least. Whether it is ever absorbed, once real suppuration or sequestration of lung tissue has occurred, I doubt. On the other hand, suppuration may go on, darting by sudden pneumonic infiltration into the periphery, cavitation becoming more and more extensive. After the cavity reaches a bronchus it may be partially emptied by the effort of coughing, refilling when the opening becomes clogged, causing recurrent periods of pneumonia with high fever, drenching sweats and distressing cough that alternate with periods of comparative quiet. Cough and expectoration continue, a dense fibrous capsule takes the place of a softer, more diffuse pneumonic infiltrate and the abscess becomes chronic. This is the usual fate of abscesses as we see them in our practice.

It must not be forgotten that a lung abscess may perforate and heal spontaneously without any kind of treatment. Indeed, one may suspect that healing occurs more frequently than we think, and that many abscesses disappear without ever being recognized, either by the patient or his doctor (fig. 1).

The incipient abscess, then, should be treated conservatively. If spirochetes and fusiform bacilli are found in the sputum, neoarsphenamine should be given. The older remedies, guajacol carbonate or creosote may be of benefit, especially later. Codeine will help control the cough and should be used, especially when the cough is paroxysmal and nonproductive. Excessive paroxysmal coughing is pernicious; it spreads infectious material about in the lung. On the other hand, a productive cough should not be checked; it the patient has sputum, he must cough it out.

Attempts at emptying the abscess by posture are usually futile, if not actually harmful. Major Shields, the medical officer in charge of lung abscesses at Letterman General Hospital in San Francisco, had a table constructed which was movable in three planes. Patients strapped to this table could be turned into any position and the abscess brought uppermost. They coughed and expectorated most abundantly when placed on the table, but they were not benefited; they were rather the worse for their strenuous bouts of coughing. Indeed, in acute fulminating abscesses, accompanied by high fever and pneumonic infiltration around suppurating areas, it is wise to lay the patient on his bad side, after the method brought out by Webb for the compression of unilateral tuberculosis. This often stops the harassing cough effectually; fever and acute pneumonia recede and the abscess demarcates and encapsulates itself.

v. Muller of Munich, Kline and others advocate the use of neoarsphenamine. When give nearly it often accomplishes a cure; especially when the abscess is not yet surrounded by a dense membrane. Later, when a dense, fibrous capsule surrounds the abscess, neoarsphenamine is disappointing. Miller of New York and others have had similar experience (figs. 2-6).

Diathermy and very mild doses of roentgen ray, 1/10-1/20 of an erythema dose, are often helpful, especially in reducing the surrounding pneumonia. The roentgen ray must be cautiously administered, not more than 1/10 of an erythema dose, and always better too little than too much. Better not at all unless the roentgenologist and his apparatus are entirely trustworthy. Thus, operation upon a girl of eighteen seemed dangerous because of repeated attacks of pneumonia and a soft infiltrate surrounding an upper lobe abscess. After mild treatment with roentgen ray the pneumonia rapidly dissolved, leaving the fibrous walled abscess which was opened later. Another young woman with a recurrent abscess was given a large dose approach-

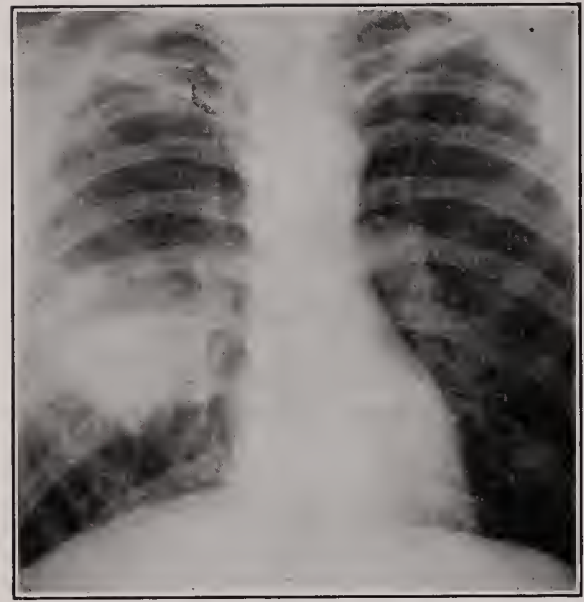

Fig. 2. Right sided abscess, April 18, 1923.

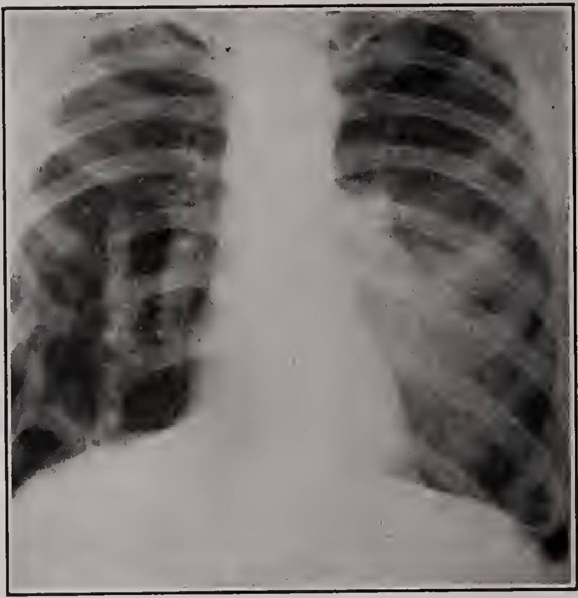

Fig. 4. Same patient, another abscess with cavitation, left side. Jan. 28, 1924.

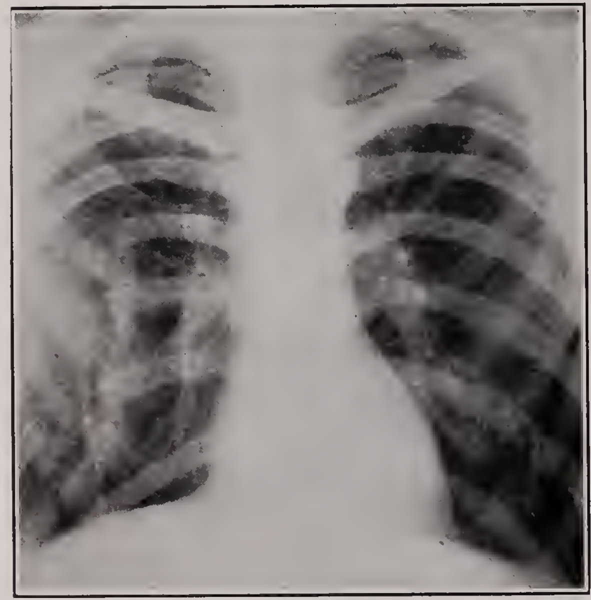

Fig. 3. Same, healed after operation.

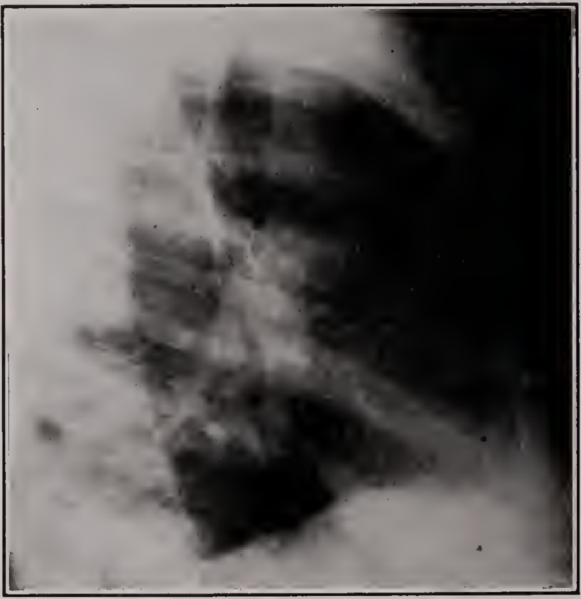

Fig. 5. Same, lateral view.

ing a full erythema dose. Immediately the lung softened and broke down and the girl died. I could not escape the impression that the high dose of roentgen ray had to do with her death.

Artificial pneumothorax has been recommended as a method of treatment. It is not without danger, but it should have a field of usefulness in fulminating pneumonic abscess accompanied by high fever and severe prostration, in which the pneumonia is far more serious than the central area of softening it may contain. Gravity of the toxemia precludes operation in this stage, but artificial pneumothorax may save life. In central abscesses without pleuritic adhesions it should also be worth a trial and carry with it small risk. In peripheral abscesses, the more usual ones, its application will be limited. Adhesive pleurisy, soon set up by the adjacent suppurating focus, will prevent an efficient collapse. Danger of rupture into the pleural cavity is always imminent, either spontaneously or through pricking the infected lung with the pneumothorax needle.

A young woman with an upper lobe abscess, in whom this method had been tried, ruptured her abscess into her chest. She was sent to me with an

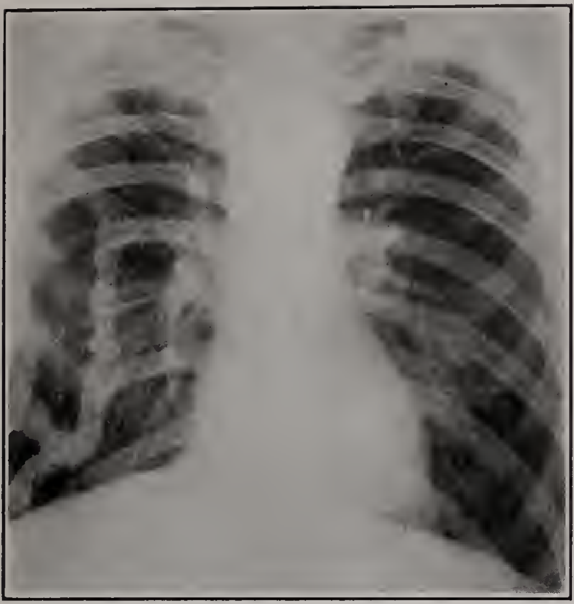

Fig. 6. Same, healed after arsphenamine, Oct. 1, 1924.

acute empyema which made the abscess very difficult to treat. I should not attempt pneumothorax in peripheral abscess.

If there is the slightest suspicion of an underlying foreign body, bronchoscopy should be done. It should also be done if one suspects a tumor. In aspiration of foreign bodies removal of the foreign body is often all that is necessary to cure the abscess. In ordinary infectious abscesses, however, I have seen no good come of attempts at draining the abscess by means of a bronchoscope, nor do I understand how (provided there is no removable obstruction) the bronchoscope can hope to empty the abscess better than the patient himself by his cough.

Abscesses that obstinately resist conservative treatment should be opened. The quantity of foul sequestra that are brought to light at operation convince every onlooker that nothing short of wide incision and evacuation can effect a cure. Decision is ordinarily not difficult. Early operation is inadvisable. Treatment with rest, arsphenamine and various physical measures should be tried first. Many abscesses will heal. Toxic patients with high fever and more or less massive pneumonic infiltrates, whose films show a hazy, ill-defined density, should not be operated upon until they are over their pneumonia; they will not survive the shock.

If an abscess is going to heal without operation, it usually does so promptly within two or three months. After this length of time, and after a thick fibrous wall has become established, so that a cavity with or without a fluid level is visible in the roentgenogram, waiting is futile. Operation for lung abscess should not be urged if the patient objects, for there are certain risks, those of embolism, pneumonia and pyemia that are beyond control. It should be advised, but not urged. When it is advisable the patient usually accepts sooner or later; he tires of his disease and comes to operation, once the idea has been broached. There is some risk in waiting; fulminating pneumonic extension or hemorrhage, especially in patients who are inclined to bleed, may cause rapid death. But between waiting and operating too huriedly the greater risk lies in early operation.

Abscesses of two to six months or even a year's standing heal promptly once they are well opened. Older abscesses that make a massive dullness due to a thick pleura and a dense infiltrate surrounding them are easiest to operate upon and heal no less readily than recent ones. However, there is such a thing as waiting too long. Not only does the patient become weakened by the repeated attacks of pneumonia and long chronic sepsis, but shrinkage and cavitation spread to the lung itself, so that one or more whole lobes may be converted finally into a thick mass of huge pus-sacks which nothing short of lobectomy can cure.

It is unnecessary to insist that the patient be carefully studied before operation, that the resources of his heart, his vessels and his kidneys be estimated. It may be necessary to operate when heart and kidneys are running on a very narrow margin, but at least a sudden uremia or an edema of the extremities may be met with due preparation. It is also wise to consider that a few days of postoperative pneumonic reaction may further tax the patient's resources.

The location of the abscess should be established by good roentgen ray films and by physical signs, not by the needle. Needling an abscess is dangerous, not so much on account of the danger of infecting the needle tract, which is slight, but on account of air-embolism and pyemia. The abscess is usually small; entering it with a needle is purely a matter of chance. The information gained is of little value. One operates if the needle draws pus, and also if it does not. Localization, however, should be accurate, for the choice of the site of operation is all-important.

Anesthesia is accomplished by a combination of methods. Nervous patients are given luminal, gr. ii, the evening before operation. All of them are given luminal gr. ii and morphine sulphate gr. ¼ with

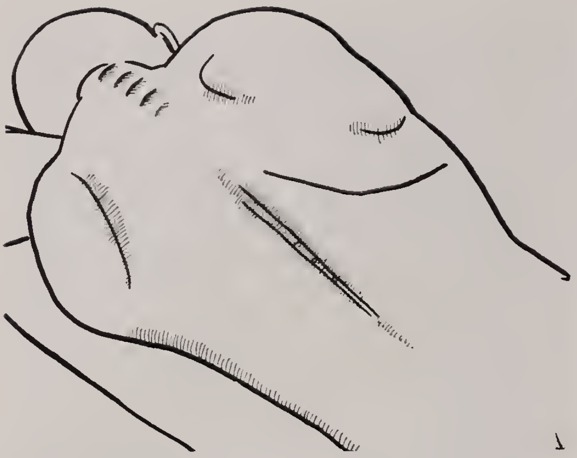

Fig. 7. Position of patient and incision for lower lobe abscess.

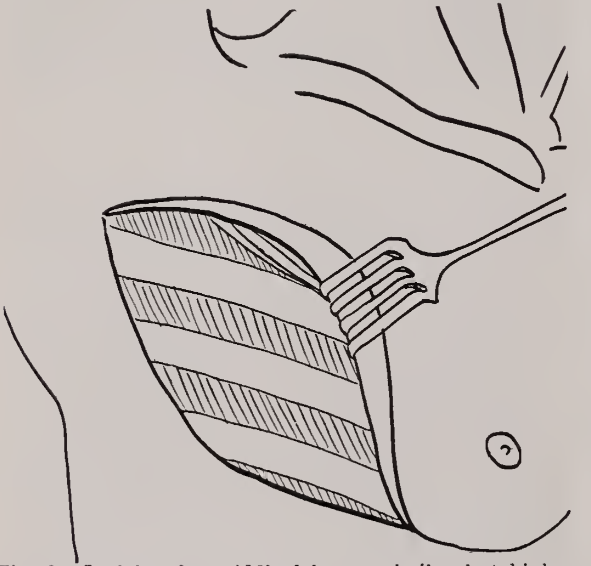

Fig. 8. Incision for middle lobe. A similar but higher incision is used for the upper lobe.

atropine gr. 1/150 half an hour before operation. Heavier patients, alcoholics and those with indomitable coughs get another 1/6 grain of morphine without atropine upon reaching the operating room. If for any reason it seems advisable to curtail the use of nitrous oxide anesthesia, either on account of extreme anemia, or on account of an anesthetist whom one cannot quite trust, the operation may begin under regional anesthesia, infiltrating the soft parts and blocking the intercostal nerves with a ¾ per cent solution of procaine containing two drops of 1:1000 solution of epinephrine to the ounce, deferring nitrous oxide until the pleura has been reached and is ready to be opened. Ordinarily light anesthesia with nitrous oxide and oxygen is begun before the incision.

After the chest is open narcosis must be deep enough to stop coughing. Addition of CO_2 to the mixture seems to be of value in checking cough. Anesthesias that begin with an uncontrollable cough are bad; they are terrifying. I have lost two patients, one on the table, one four or five days after operation, from pyemia and multiple lived abscesses following such an anesthetic. An uncontrollable cough is so terrifying that I think it wise not to proceed with operation unless it can be checked. It is his posture on the operating table that makes the patient cough. He is placed with the abscess uppermost and begins to breathe deeply under beginning anesthesia, dislodging the contents of his abscess. For an hour or two before operation, therefore, he should be placed in bed in the same position he is to occupy on the operating table and made to empty his abscess as much as possible.

For lower lobe abscess he lies on the good side, turned about one-fourth way prone. The arm of the affected side is drawn forward to get the scapula out of the way; the lower knee and hip are flexed; the upper leg is stretched so as to curve the spine with the convexity uppermost (fig. 7). A curved or hockey-stick incision follows the spine from the sixth or seventh rib downwards to the ninth or tenth, and then runs forwards in the eighth or ninth intercostal space.

For middle lobe abscess the patient lies on his back with the bad side slightly elevated. Incision begins over the fourth intercostal space in the midaxillary line and slopes downwards and forward, following the sixth rib (fig. 8).

Abscesses of the upper lobe are difficult to reach; none of the incisions are quite satisfactory. A trapdoor with an upper border parallel to and about one-half inch below the clavicle, with a vertical limb running downwards one-half inch to the right or left of the sternum, and with a lower horizontal limb following the fourth rib outwards, gives most room. The rib cartilages are resected to the costochondral junction. The ribs may be left attached to the soft parts and broken or cut through and deflected outwards with the trap-door flap, or three or four inches of each may be resected. The ugly scar of this incision shows in women; in men the hair of the breast grows into it and makes a troublesome dermatitis.

Cosmetically better but giving less room is an axillary incision. For this the patient lies on the good side, with the bad arm elevated and drawn backwards. The incision begins in the posterior axillary line, and runs forwards and downwards along the fifth rib under the mamma. The mamma may be pushed up out of the way. The lower edge of the great pectoral muscle usually has to be incised to make enough space; its subsequent contracture is likely to limit abduction of the shoulder. Three or four inches of the second to the fourth ribs inclusive are resected. For lateral abscesses this incision is perhaps better than the anterior one. It has the advantage of leaving an entirely inconspicuous scar.

Posterior incisions for the upper lobe are unsatisfactory. There is not enough room between the scapula and the spine, and the overlying musculature is so thick that adequate exposure is impossible.

The skin and muscles on the concavity of these incisions, all of which are curved, are retracted upwards, exposing the ribs. All bleeding vessels are tied. Three or four inches of rib are resected subperiosteally, the intercostal vessels are tied, and the central nerve stumps injected with ½ c.c. of absolute alcohol. The first rib to be removed is resected with careful regard for the pleura. A pleura not thickened by previous inflammation tears with the greatest ease and the smallest rent is irreparable. If it is thin, and the speckled lung is seen sliding back and forth beneath it, further ribs are resected with equal care and the intercostal bundles tied off and removed, the finger being used to push the pleura most gently away from the overlying structures. Once separation is started the pleura parts from the endothoracic fascia without much difficulty. It is also pushed away from the intact ribs at the edge of the thoracotomy opening, so that the ribs make an overhang. The underlying lung is gently palpated through the pleura. At times one may feel an area with doughy resistance different to the resistance of the normal lung, which is that of eiderdown or of a soft rubber sponge. A large iodoform gauze pack is placed on the pleura and pushed gently under the overhanging ribs, covering the pleura completely (fig. 9).

The skin and soft parts are closed over the pack with a few deep sutures of silkworm gut. The pack should be large enough really to compress the lung. A Mikulicz tampon, consisting of an outer layer of iodoform gauze filled with a fluffed three-yard roll of plain gauze, is best (fig. 10). If the pleura is accidentally torn no pack is inserted, but the wound is closed after the patient is made to press or strain under a pressure mask, so as to force all the air out of the pleural cavity.

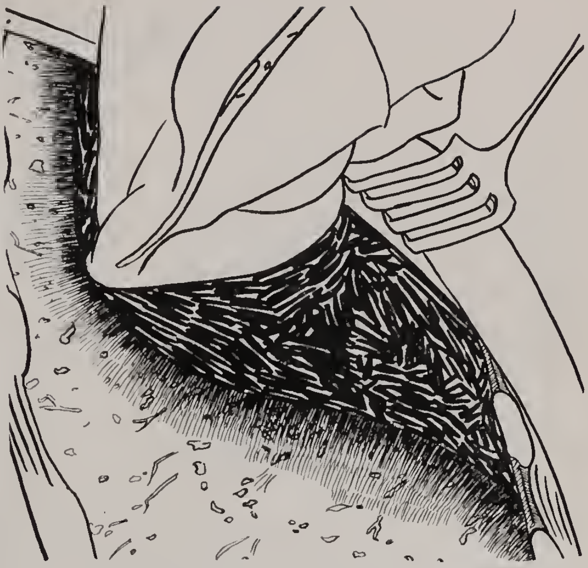

Fig. 9. The ribs have been resected. The lung shows through the thin pleura which has been pushed away from the ribs. The resulting space is being packed with gauze.

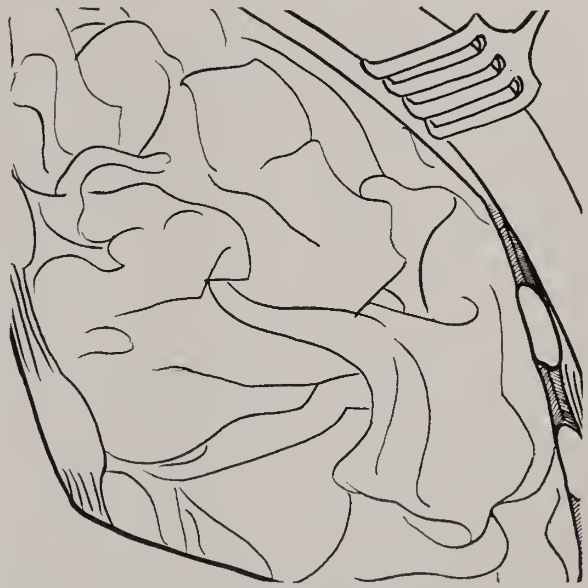

Fig. 10. The large pack covers the pleura completely and is pushed well under the overhang of the ribs.

Even a simple rib resection without opening of the pleura is often followed by a feverish reaction. Coughing is painful; repression of expectoration and retention of purulent secretion are not unlikely to result.

Two weeks later the wound is reopened. It contains a turbid fluid which may have begun to leak out between the stitches. The pack is removed. Under it lies the much thickened pleura, its outer surface covered with succulent deposits of lymph. The underlying lung is adherent, but the adhesions are tender and friable; pressure will easily loosen

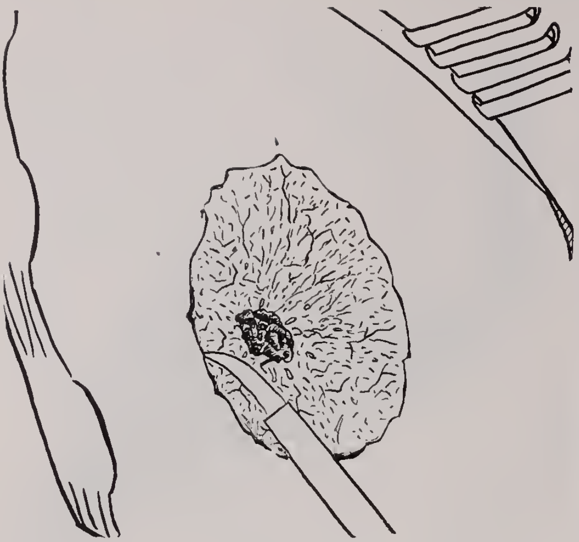

Fig. 11. A funnel shaped opening has been made with the cautery and the abscess is exposed.

them, even violent respiratory movements may. It is well, therefore, to unite lung and pleura with a few deep stitches of chromic gut.

If the pack was large enough, it may have brought the abscess close to the surface of the pleura, and the palpating finger may feel it, even through a thickened pleura, as a doughy, more resistant spot. Occasionally the pack will make pressure enough to lead pus from the abscess outwards, so that one may find a sinus under it leading directly into the abscess.

Up to this point, and during the first preceding stage, one may proceed with deliberation; from now on there must be no delay. With a large hot Percy cautery or with a large soldering iron at white heat, a funnel shaped or cup shaped area is burnt through the pleura and out of or into the lung (fig. 11). Small cauteries are useless. The cautery must have mass; otherwise it cools when it comes in contact with the bloody and moist lung tissue.

As soon as the abscess is open the patient coughs and blows putrid greyish, putty-like masses from the cavity. Their horrible stench is a welcome sign. They vary in quantity. They may be no larger than an olive-pit and may disappoint the operator expecting to find more; they may fill a tea-cup. They are rapidly removed with a good suction apparatus and the cavity is rapidly and firmly packed with iodoform gauze, completely filling every cranny. All this should be done quickly, in much less time than it takes to tell it. There should be no attempt at clamping vessels or tying them and no sponging or wiping, so as not to open vessels to the air or pus that surrounds them. The eschar produced by a large cautery is their best protection.

Older abscesses, those near the surface, in which the pleura when first exposed is dense and thick, may be opened immediately in a one-stage operation. Therefore, if a one-stage operation is intended it is better to operate upon abscesses late rather than early, and to give them time to reach the pleural surface of the lung.

When the pleura is so thick that nothing can be felt through it, the abscess may be searched for with a needle. Often if the cavity happens to contain air, the needle will withdraw air and not pus. If the air is expelled slowly from the syringe and the syringe smelt at, the characteristic stench is as good as signal as though pus had been reached. The needle is left in situ and, with it as a core, a large funnel- or cup-shaped area is cauterized with a Percy cautery or a soldering iron. The cavity is packed as in the two-stage operation; the wound in the soft parts of the chest is dressed with gauze and thickly covered with vaseline. The wound is left wide open. Sutures are out of place. The size of the wound may be alarming, but there is never the least trouble is getting the huge opening to close; the trouble always lies in keeping it open.

Vaseline prevents the outer dressings from adhering; without it the gauze sticks fast to the skin edges and the first changes of dressing are painful. However, if the wound oozes, vaseline had best be omitted; it prevents clotting. A scultetus binder holds the dressings in place.

The patient is put to bed without delay and placed on his bad side. Outer dressings are changed as necessary. The iodoform pack remains in the lung for four or five days, after which it is changed daily.

The abscess cavity becomes clean and pink in about a fortnight. Often a bronchial fistula appears in the bottom of it, usually a small one. About half of these fistulae close spontaneously.

If, after the abscess is open, cough and expectoration cease and the temperature, which for a few days after operation is likely to be elevated, drops to normal, convalescence will be smooth and rapid. The gain in weight is often extraordinary, forty, sixty pounds and more.

Too often the abscess is so sinuous and branched that one cauterization is not enough. From time to time cough and expectoration reappear, or never quite cease. Cheesy, foul plugs are coughed up or discharged from the bronchial openings that debouch into the wound. Further cauterization is then necessary. If done early, before the wound has contracted, these secondary operations are simple, need no further skin incision or rib resection and take but a few minutes. Sometimes, especially in patients who cough violently, the abscesses are not single, but multiple; then there is no choice but to open them, first one, then the others.

The risk of operation lies in air embolism and purulent infarction, complications so uncontrollable that operation is always to be approached with concern. A smooth anesthetic, avoidance of violent respiratory effort and of cough help reduce these complications. A massive cautery, which sears the vessels before it opens them, is better than a small cautery which cuts or a knife. When one considers the sucking action of the large veins in a stiff indurated lung, one wonders not that air-embolism or aspiration of pus occurs, but rather why it does not always occur.

The only way I can see to avoid embolism would be to attack the hilus and to secure the vessels before opening the abscess. As yet, however, the dangers of lobectomy and its mortality greatly exceed the danger of embolism.

In after-care, and to prevent reinfection, renewed administration of neoarsphenamine is of value. Careful exposure to the sun and the violet ray help combat anemia and the effects of chronic sepsis.

Perhaps I have made the risks of operation appear unduly great. The prognosis of operation for abscess is good. Most patients are completely restored to health and working capacity.

EYE EXAMINATION OF SCHOOL CHILDREN. Frank H. Rodin, San Francisco (*Journal A. M. A.*, Sept. 21, 1929), discusses methods of examination of the eyes of school children. He says that there is a marked discrepancy in the percentages of defective vision found in the examination of school children by various observers. There is no definite standard of what to consider defective vision in children examined in the schools. The examination of the eyes is often done under unfavorable surroundings and by unqualified persons. The nurse's room should be so arranged that vision can be taken under uniform conditions. The following standard is recommended: Children attending kindergarten and the first five grades, while standing on the 15 foot line, should be able to read the 20 foot line on the chart with the better eye, and the 30 foot line, or better, with the other eye. Vision below that is to be considered defective. For children of the upper grades this standard is suggested: While standing at the 18 foot line they should be able to read the 20 foot line on the chart with the better eye, and the 30 foot line, or better, with the second eye. In testing the vision of 15,267 children in San Francisco, Rodin found that 12 per cent had eye defects. Children with marked defective vision should be referred to the special sight-saving classes.

CHILD CONTACT WITH TUBERCULOSIS*

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One of the most important phases, and probably the one most neglected in the control of pulmonary tuberculosis is that period intervening between the infection of child contacts and their appearance in young adult life with symptoms of pulmonary tuberculosis. The literature on every aspect of the subject has grown in volume rapidly during the past few years, while progressive communities, such as the city of Minneapolis and many medical groups, during the past five years have devoted to the subject the attention it deserves, and their results have more than justified the effort expended.

The private physician makes the diagnosis of pulmonary tuberculosis in the adult and pays but scant attention to the children who are almost invariably close contacts. He is in a position to do much to impress those responsible for the welfare of these contacts with the menace to their future health, which exposure to an "open" case of pulmonary tuberculosis has and a continued exposure will entail.

If a patient were ill with smallpox or scarlet fever, it would be a simple matter for the physician to interest the persons responsible for the welfare of the child contacts in any steps calculated to forestall illness in such children. In the incubation period, as exemplified by the time elapsing between the infection and the production of such biochemic substances as make a positive cutaneous tuberculin test possible, which was estimated by Hamburger to be approximately one month and by H. Koch to be about two months, the infectious processes in comparatively well nourished children go on unnoticed, especially since the attention of the entire family is usually directed to the solution of the problems incidental to the patient himself. The so-called primary stage which follows is that period, during which extension from the pulmonary area first involved to the regional lymph glands takes place. It is at this juncture that most contact children will be seen.

The relationship of the private physician to the problem of how to prevent infection from entering the secondary stage of extension to contiguous structures or remote areas through hematogenous or lymphatogenous dissemination, is the subject which I wish to call to your attention. As a guide to the proper investigation of the question whether a given contact has been infected and the degree of infection, may I tell you briefly of the routine of the so-called Child Health Clinic which is a part of the Out-Patient Department of the University of Oregon Medical School.

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*Read before the Fifty-fifth Annual Meeting of Oregon State Medical Society, La Grande, Ore., May 16-18 1929.

This clinic has been in operation for the past five years and admits any child more than 7 per cent under weight, whose malnutrition in the opinion of a parent, school nurse, county nurse, etc. is felt to justify a thorough study. Essentially, however, it is a clinic for child contacts with tuberculosis. During its existence some 700 children have been examined at this clinic, 400 during the past three years, during which time the clinic has been under my supervision.

Every case of tuberculosis reported to the City or State Health Department, with even a temporary Portland address, is at once visited by a nurse in the employ of the Visiting Nurses Association. This organization works in close harmony with the Oregon Tuberculosis Association. Investigation is made as to the number of children who have been exposed to the reported case. A strenuous effort is made to have every child taken to a private physician or brought to the clinic, where the following routine is carried out.

A complete history and report of a physical examination is prepared by the student assigned to the case. Roentgenograms of the chest, preferably stereoscopic, are made routinely. Four intracutaneous tuberculin tests are done at weekly intervals, each being read in seventy-two hours, unless a positive result or four negative results are obtained.

The concentrations used are 1:10,000, 1:1,000, 1:100 and 1:10 of Old Tuberculin in sterile normal salt solution. The quantity used is 0.1 c.c. for each test. Temperature, pulse, weight, normal weight, and height are ascertained at each visit. When all the data have been obtained, the case is reviewed with the student, the history carefully rechecked, the physical examination repeated and the results of the roentgen examination and the tuberculin test considered.

Might I say at this time that almost any detail of this routine has been the subject of many publications in recent years. It is our feeling that in no case can a reasonable decision be rendered without all the above data being at hand. There is no reason why the same routine could not be carried out by any physician. It should, however, be possible for people of limited means to have facilities available within a reasonable distance in any part of the state, where such examinations could be conducted at regular intervals, gratis.

In considering the information at hand, in forming an opinion of the degree of involvement, the point of departure must be the history of contact. If present, we expect a positive cutaneous tuberculin reaction and if this is elicited, we have sufficient evidence to demand periodic reexaminations, the frequency of which will depend upon the individual's necessity. The important fact to impress upon the patient, if it be an older child, and upon the parents or guardians is that this observation must be constant and prolonged.

Finding a series of negative cutaneous reactions, we make every effort to terminate exposure to infection, if it still exists, and order a complete reexamination in three months. While the termination of contact is always sought, it is criminal to allow a child who has thus far escaped infection to continue such a precarious existence. Reexamination is necessary because we may be dealing with a child during the incubation period, when the factors necessary for the production of a cutaneous reaction are not yet present.

If to this base of history and specific reaction are added the other two sides of the triangle, namely, suggestive symtomatology and what little can be drawn from suggestive physical signs on the one side, and on the other suggestive roentgen findings, we have a problem which merits the closest study. These cases must be classified as to degree of involvement and proper advice given in each instance as to mode of living, schooling, improvement of nutrition and removal of all remediable defects which might prevent the child from exerting all its energies in arresting or keeping arrested the tuberculous infection.

It is not within the scope of this paper to delve into the types of involvement found or the proper attitude which should be taken toward each type. Suffice it to say that, of the 300 children who were observed during the past three years giving a definite history of contact, 216 or 72 per cent reacted to the intracutaneous tuberculin tests, while of 100 children giving negative histories as to contact but definitely malnourished, only 22 per cent gave positive reactions. This corresponds closely to the average of results obtained by investigators in various parts of this country.

It is our thought that of equal importance with the necessity for adequate institutions for the care of adult tuberculous patients, is the need for preventoria and periodic clinics in various strategic parts of the state for the observation of contacts.

SUMMARY

The purpose of this paper is to attempt to focus the attention of general practitioners of medicine upon the problem of child contacts to tuberculosis, to suggest a routine for their proper observation, to urge the establishment of clinics in strategic localities, where these children can be properly observed at regular intervals, and to suggest an increase in institutional facilities for the proper care of the more advanced cases.

513 Mayer Building.

Human Ova from Uterine Tubes. The material used by J. P. Pratt, Detroit, Edgar Allen, Columbia, Mo., Q. U. Newell, St. Louis and L. J. Bland (*Journal A. M. A.*, Sept. 14, 1929) for study was obtained from tubes removed in connection with fibromyomas and endometrial implants. Some tubes were washed in situ when none of the pelvic organs have been removed. When the tubes were not to be removed, the uterus was compressed by uterine elevating forceps applied just above the cervix. A small needle with a syringe attached was then introduced through the muscle into the cavity of the uterus. Salt solution was then injected into the cavity and allowed to run out through the tube. One tube was compressed with the fingers while the other was being washed. The fluid was collected as it ran out the fimbriated ends and was carefully searched for ova. This method is also useful to test the patency of the tubes. In the second method, when the tubes were removed at operation they were first dissected free from the mesosalpinx. A small cannula was fixed in the fimbriated end of each tube and then washed with physiologic solution of sodium chloride. The washings were then examined for ova. Freeing of the tube seemed necessary, as otherwise there might have been a kinking which would have interfered with successful washing. The cases studied represented all stages of the menstrual cycle. The most suitable material was found at operations occurring near the middle of the intermenstruum. Nine specimens in all were obtained which on first examination in salt solution seemed to be ova. Five of them were definitely identified as ova by further study after examination and section. One was obtained on the fifteenth day of the intermenstruum (fifteen days after the onset of the flow). Two others, which were twin ova, one obtained from each tube, were also found on the fifteenth day. A fourth ovum was obtained on the sixteenth day. This evidence therefore places ovulation before the fifteenth or sixteenth day. The twin ova were most nearly normal. Sections showed that these ova had already extruded the first polar body and had formed the second maturation spindle. The next specimen recovered also had formed a polar body before ovulation, although the maternal chromosomes could not be located. Another had two polar bodies. As the ovum fragmented during fixation and dehydration, this observation could not be checked in sections. These observations supply the first evidence as to the stage of maturation reached at ovulation by the tubal ovum of man, a point under controversy in the recent literature. Ovulation, dated from the onset of the previous menstruation, preceded the sixteenth day in one case, the fifteenth day in three cases and the fourteenth day in one case. These data further confirm the observation, based on the condition of the corpus luteum, that ovulation occurs most frequent at the middle of the intermenstruum.

ESOPHAGEAL STENOSIS FOLLOWING TYPHOID FEVER

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Cicatricial stenosis of the esophagus from healing of typhoid ulceration has become very rare in recent years, owing to the infrequency of typhoid infection. A total of twenty-seven cases has been collected from the literature, to which I wish to add one case.

The literature on the subject of typhoid ulceration of the esophagus begins with the classical description of Louis[1] in 1841, although this writer made no mention of stenosis developing from the condition. Packard[2] in 1898 reported the first case of stricture. This was followed by those of Mitchell[3] and Summers[4] in 1899. Pyle[5] in 1900 described a case of stenosis near the cardia which was successfully dilated by a rubber bag dilator distended with water. Reports by Tinker,[6] Dugan,[7] Turner[8] and Thompson[9] followed, bringing the total to thirteen cases reported up to and including 1904.

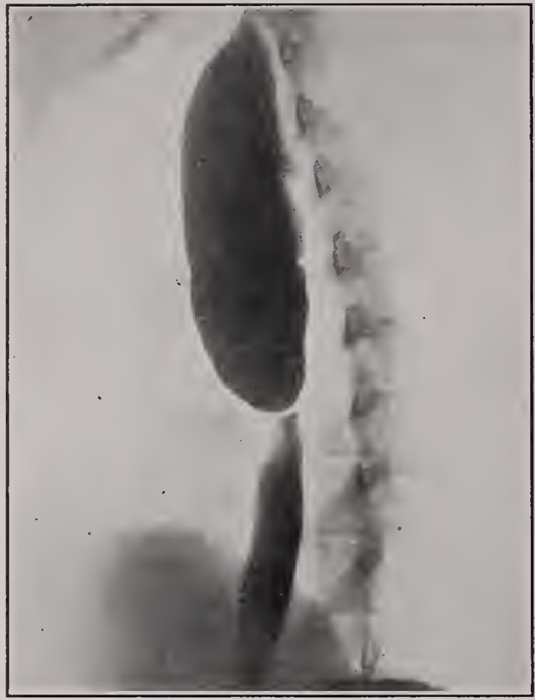
Vinson[10] in 1923 reviewed all previously reported cases and reported in detail thirteen seen at the Mayo Clinic between 1909 and the date of his paper. Of the twenty-six cases collected, only three patients were women. A later paper (1927) by the same author[11] states that the total number of typhoid strictures seen at the Mayo Clinic was fourteen, thus bringing the total number of reported cases to twenty-seven.

CASE REPORT

B. E. C., a man, aged 43, seen March 24, 1926, had had typhoid fever when eighteen years of age, being confined to bed for one hundred days. Difficulty in swallowing began while still in bed and had persisted with very little variation since. The trouble was first noticed on attempting to eat mush, and increased when more solid foods were taken. There was no pain. He had been living chiefly on soups, gravy and screened foods. No solids had been taken for many years. An average weight of 140 pounds had been maintained in spite of his trouble. In addition to typhoid fever at 18, there was a past history of measles at 22, and pneumonia at 30 years of age.

Physical examination was negative except for pyorrhea and stenosis of the esophagus. An esophageal bougie met with an obstruction 14½ inches from the incisor teeth.

Fluoroscopic examination revealed stenosis at the point indicated by the bougie (see illustration), and the patient was given a silk thread to swallow. Two days later, with the thread as a guide, the stricture was dilated with the Sippy olives passed over a piano wire. He was treated off and on during the next few weeks and the stricture was gradually overcome, so that ordinary foods were taken with ease. There has been no trouble in swallowing since that time, although he has been treated for colitis which appeared in the summer of 1928, following use of roughage. Return to a less irritating type of diet was followed by relief.



Cicatricial stenosis of the esophagus following typhoid fever.

COMMENT

The above case is reported to add one case to those previously described. There have doubtless been many others not reported, for all so far published have occurred over a relatively short period of time, and during a period in which the disease causing stenosis has shown a most remarkable decrease in frequency. Additions to the literature on this subject must for obvious reasons become less frequent as the years pass.

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1106 Stevens Bldg.

BLADDER TUMORS*

W. J. Pennock, M.D.
AND
W. J. Stark, M. D.
SPOKANE, WASH.

There are two types of bladder neoplasms which are of interest to us as clinicians, the papilloma and the carcinoma. Much confusion has existed in the past because of the general belief that the bladder papilloma was a benign growth which might undergo malignant degeneration.

McCallum expresses the modern view when he says, "papillomata tend to recur when removed; they usually invade and destroy the bladder wall, finally revealing themselves as carcinomata. They should, therefore, be regarded from the first as papillary carcinomata." The acceptance of this view gives us a clear conception of these growths and a firm basis from which to proceed with their treatment.

There is little at first to attract a patient's attention to the presence of a neoplasm of the bladder. Pain is negligible. There is little change in urination unless the growth is close to the neck. Bleeding occurs early but there may be no gross hematuria for some time. The presence of even microscopic blood in the urine indicates the need for immediate determination of the presence or absence of a bladder tumor.

In the case of neoplasms in other parts of the body it is usually possible to take a section, and to rest our diagnosis on a histopathologic examination of the specimen. This is not practical in the case of bladder tumors. It is easy to remove a portion of a bladder growth by a cystoscopic rongeur, but the part removed does not give a true picture of the entire growth.

Burger demonstrated in a large series of cases that the distal portion of a papillary carcinoma often was benign histologically, while its base showed typical malignant changes. With a rongeur one cannot remove a section of the base without incurring the risk of severe hemorrhage and serious damage to the bladder wall.

We have to depend upon the appearance of the growth for diagnosis, prognosis and for the determination of the treatment to be employed. If the growth presents itself as a stalk, projecting by a small pedicle from the bladder wall, if it is covered by unbroken mucous membrane and if it does not apparently extend into the tissues about its base, we regard it as possibly benign. A growth apparently invading the bladder wall or one showing necrotic areas is probably malignant. Large growths and multiple tumors are more likely to be malignant. We all see many cases in which malignancy is evident at the first examination.

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*Read before the Fortieth Annual Meeting of Washington State Medical Association, Yakima, Wash., Aug. 29-31, 1929.

When a bladder neoplasm is apparently benign or only doubtfully malignant we try to destroy it by electrocoagulation. Two weeks later we make a bladder examination and decide whether to regard the growth as benign or malignant by its reaction to the treatment.

Benign neoplasms respond to electrocoagulation and two weeks after the first treatment the growth should have almost entirely disappeared, if it is benign. We realize that this is absolutely empirical but it is a satisfactory method clinically. Even if the neoplasm disappears promptly following electrocoagulation, we insist upon periodic examinations of the bladder as there is a marked tendency to recurrence and occasionally a malignant neoplasm develops at the site of an apparently benign one.

If there is not a satisfactory response to electrocoagulation, the tumor is regarded as malignant. Many types of treatment are advised for the malignant neoplasms. If a tumor identical histologically with a papillary carcinoma of the bladder were located on the surface of the body, we would all agree that it should be removed by operation.

If this is the proper treatment for a neoplasm elsewhere in the body, it must be suitable when the tumor is located in the bladder. There are difficulties in applying this method in the case of bladder tumors but the principle remains the same. If the entire growth can be removed, the patient is cured; if it cannot be entirely removed, he cannot be cured.

The prognosis in cases of malignant neoplasm of the bladder is far from being hopeless, if they are seen before metastases occur.

Edwin Beer recently reviewed the results of Mount Sinai Hospital. He found that sixty-five cases of papillary carcinoma had been treated by operative removal. In the cases where infiltration was not evident, sixty-five per cent have apparently been cured. When infiltration of the bladder wall was apparent, cure occurred in thirty-five per cent. These cases have been followed for years and have had repeated cystoscopic examinations.

At present the operative mortality of bladder resections is fairly high. This will be reduced and the percentage of cures will be raised as radical treatment is instituted earlier before extension has occurred and while the patient's general condition is unimpaired.

A good exposure is essential to a successful resection. Most of the peritoneal reflection over the bladder is loosely attached and can be easily separated. There is, however, an area surrounding the urachus, where the peritoneum is firmly adherent. Unless the bladder is entirely freed, resection of a portion of its posterior wall is difficult.

While I was working in Vienna last spring, Hassinger showed me a practical way of securing the desired mobilization of the bladder. He cuts down upon and exposes the anterior wall and the peritoneal reflection. Next, he incises the peritoneum and cuts it backward upon both sides of the urachus a distance of three to four centimeters. This leaves a wedge-shaped portion of the peritoneum attached to the bladder. The peritoneum is then separated from the lateral and posterior walls and cut across just below the part which is firmly attached. The peritoneum is then closed by suture. The bladder is not opened until after the closure of the peritoneum.

By this method the bladder can be easily mobilized and any portion of it may be resected. Bladder tumors are usually located about the ureteral orifices and usually the distal portion of one ureter is removed with the neoplasm. This necessitates the transplantation of that ureter in some other portion of the bladder.

PRESENT CONCEPTION OF ESSENTIAL HYPERTENSION. Arthur Stanley Granger, Los Angeles (*Journal A. M. A.*, Sept. 14, 1929), asserts that essential hypertension is a condition characterized by a persistent systolic blood pressure of 145 mm. of mercury, or over, and a left ventricular cardiac hypertrophy, without demonstrable cause, though the hypertension may exist in the early stages without the cardiac enlargement. There is no definite cause for this condition. The factors most concerned are heredity and vasomotor hyperirritability. Vascular lesions of the medulla, affecting the vasomotor center, probably may produce a rise in the systemic pressure, but there is no proof that a hypertension does not precede such lesions. Sclerotic changes in the afferent arterioles of the renal glomeruli are almost pathognomonic of essential hypertension and are the most common pathologic finding. The height of the diastolic pressure is probably of greatest moment in determining the prognosis. The cause of death, in a series of patients with essential hypertension, was cardiac failure in 52 per cent, cerebral vascular accidents in 31.5 per cent, uremia in 5.5 per cent and intercurrent disease in 11 per cent. Treatment should be directed mainly toward a regulation of the life and habits of the individual, so as to promote rest, freedom from worry and aggravation, and moderate pleasurable exercise. Dietary restrictions are of use only in the obese, or when cardiac or renal incompetence occurs. Drugs have a very small field in this condition.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington and Idaho
Devoted to the Interests of the Medical Profession of the Pacific Northwest
Editorial Office, 543 Stimson Building, Seattle, Wash.
OCTOBER, 1929

EDITORIAL

PROGRAM OF THE STATE MEETING

There are two objectives to be attained by the program of the state association meeting, the scientific papers representing the work and attainments of the members, while the social features help to consolidate intimacies among the profession. The latter has become quite generally standardized throughout all the states by setting aside one day for golf, assignment of an evening for the dinner and other entertainments for the ladies. In the early days the literary program commonly included papers by members from different parts of the state. Later came the desire to make it more attractive by introduction of prominent members of the profession from distant cities. In some cases this plan has been carried out to the extent of suppressing ambitious members of the home organization.

In the states of the Northwest the necessity for this outside attraction has diminished in recent years, especially due to the existence of the Pacific Northwest Medical Association with its superb annual programs, which offer an opportunity to the profession of these states to hear the leaders among our medical men. This is supplemented by the summer extension course of the University of Washington, programs of several medical foundations in Portland, together with the attractions of specialists' societies which introduce prominent men in their lines of work. Accordingly, at the present time it seems that the state program might best be devoted to papers from the association members with the special purpose of offering the younger men the opportunity of demonstrating their familiarity with the latest advances in medical science, together with their accomplishments in clinical work. The Oregon State Society has adopted this plan within recent years, greatly to the satisfaction of its members, and with resulting enthusiasm in the preparation of papers and accompanying discussions.

At times in past years the program of the Washington association's annual meeting has been prepared with an excess of papers, difficult to carry out as designed. In opposition to this condition, a few years ago a by-law was adopted, limiting papers at any one session to three in number. Since the reading of papers is confined to twenty minutes and the discussion to five, this has offered a very meagre program for a three hour session. Accordingly there has been much criticism and dissatisfaction with the necessarily limited programs which have been scheduled. At the Yakima meeting this by-law was eliminated and hereafter the number of papers to be read at each session will be determined at the discretion of the program committee. If the example of the Oregon society were followed and the positions on the program confined to members of the association, it is believed by many that new life might be instilled into the scientific programs and much benefit would accrue to the organization as a whole.

RELIEF FROM TUBERCULOSIS

The older generation of physicians will recall the time when pulmonary tuberculosis was considered an incurable and hopeless disease. Treatment of its victim was practically confined to making him as comfortable as possible and awaiting the inevitable termination. Lest he might take cold and thereby grow worse, he was carefully guarded from drafts and often spent his time near the stove which with the convenient coal scuttle served as cuspidors. There was supposed to be a mysterious benefit in cod liver oil, which was administered freely and curtailed only by the advent of digestive disturbance. Numerous specifics were abundantly advertised which were commonly taken with uniform lack of improvement. There was a universal belief in the magic benefit of climate. The elevation of Colorado and the sunshine of California were supposed to assure improvement or recovery, if the financial conditions would permit the experiment of their influence. The tragedies of the indigent, however, whose limited funds served only to transport them to the long desired haven where they commonly met an untimely death, constitute a vivid recollection to the older physicians. Special treatment of tuberculosis in infants and childhood was practically unknown. Fatality was the accepted result in patients of this age. The belief in climatic benefit was a forerunner of modern treatment of this disease, although for a long time the medical profession and the public at large were slow to accept the possibilities of measures so contrary to the traditional management of these patients.

It is well known that the modern conception of all forms of tuberculosis and their scientific treatment have produced an astounding relief in morbidity and mortality. Younger physicians are educated to the present day conception of the recognition and efficient treatment of tuberculosis in all its forms and as it appears in different ages. Nevertheless it is unfortunately true that in too many cases early diagnosis is not obtained and treatment is not begun during the earlier periods when amelioration of the condition is possible and most effective. The symposium on tuberculosis, which appears in this issue, can be studied with profit by all our readers. Although little may be offered which is new, important facts are here presented which should be constantly in the mind of every practitioner. As has frequently been emphasized, the most important consideration pertaining to this disease is early diagnosis. If this can be accurately obtained, adequate treatment will most likely be followed. These papers, summarizing many features of this wide-spread disease, are commended as worthy of careful perusal and contemplation.

THE PAN-PACIFIC SURGICAL CONFERENCE

The Pan-Pacific Surgical Conference, which met in Honolulu August 14-24, was called by the Pan-Pacific Union. Delegates from practically all of the universities, medical colleges and the leading surgical associations in the countries bordering on the Pacific ocean were present. In all two hundred and thirty-seven attended the conference. While the larger number were members of the Hawaiian Territorial Association, which organization requested the Pan-Pacific Union to call the conference, there were one hundred overseas delegates. The countries represented were Australia, China, Japan, Russia, Korea, and the United States.

The program was furnished largely by the delegates from the Pacific Coast states, numbering fifty-four. The Australian delegation was headed by Dr. Normal Royle of Sydney, whose research and surgery of the sympathetic nervous system are familiar to all. The Japanese delegates were headed by Dr. Makoto Saito, the outstanding neurosurgeon of the Orient. He demonstrated his new method of localization of cerebral tumors by means of injection of the cerebral arteries with a modified lipiodol solution. The Chinese were headed by Dr. F. C. Yen, who was equally at home in practically every field of surgery. The same can be said of Dr. Lee from Korea. These two young men demonstrated their fitness for leadership in their respective countries.

One of the reminders of the Great War tragedies was in the Russian delegation. This represented that little remnant of Russian civilization which has found a foothold in Shanghai and is still attempting to keep contact between old Russia and the rest of the civilized world. The hearts of all those present went out to these two men as they presented their credentials at the opening session and it became known what they stood for.

The world travelers were the Australians who have served the British empire in various parts of the world. Dr. Hardie Neil of New Zealand headed his delegation. He has served under the British flag in practically all of its provinces except Canada. He was a picturesque figure and his literary attainments were by no means the least of his accomplishments.

Dr. Fred H. Albee of New York was the representative of South America, being the president of the Pan-Pacific Medical Association and his hearty cooperation in the entire program and the contributions that he gave, both in original papers and discussions, were one of the outstanding features. The American College of Surgeons was ably represented by Dr. Jeff Miller of New Orleans. His charming personality and brilliant intellect added greatly to both the discussions and the social activities.

The hospital standardization activities of the College were presented by Dr. Malcolm T. MacEachern of the American College of Surgeons. The countries of the Orient are just awakening to America's great forward hospital movement and they kept Dr. MacEachern busy explaining the intricate mechanical and electrical workings of the modern hospital.

The setting for this conference was most picturesque. Honolulu lends itself beautifully to such an occasion. The tropical vegetation, the tall cocoanuts and palms, the varicolored flowers, both of trees, shrubs and annuals, the steep hills and wooded valleys, the ever present sunshine and the warm ocean roaring in upon the white sands have been capitalized by the inhabitants in a way that one cannot describe. Situated as these islands are in the center of a vast ocean, the people are ever anxious to see faces from across the sea and a spirit of hospitality has developed which is not limited to the white race, but seems to have pervaded all of the thirty-two different nationalities represented in the daily activities of the island life. There are no locks to the doors in Honolulu, there are not many doors. The houses are open and apparently free to all new comers. The warm sea breezes meet a responsive cord in the warm hearts of these people and outlanders soon learn that they are in a new world, populated by a new people.

Immediately upon arrival of the ship, the delegates were met by the reception committee, bearing beautiful floral leis which were soon placed about the necks of all the delegates, their wives and friends. They were then taken to their hotels and the conference was formerly opened.

A great oriental pageant had been arranged and each country's flag was borne by school children of that nationality, presented in review before the assembled delegates. The Pan-Pacific Union, through the president of the Union, former Governor Wallace R. Farrington, turned over the conference to its chairman and the delegation from each country was then introduced. While English was the official language, the delegates read their credentials in their own languages. It was a truly Oriental picture presented at this opening of the conference. The delegates and their wives were then guests at a reception in the governor's mansion.

The following morning the sessions began at seven o'clock, at a breakfast round table. Each morning a different symposium was presented. At nine o'clock the regular meetings of the delegates occurred and continued until twelve or one o'clock. The afternoons were given over to golf, trips about the island, swimming and other pleasures. In the evenings banquets, dinners, private parties and swimming were in order. A trip to the volcano on the Island of Hawaii was arranged for those visiting delegates who cared to go, while others visited different islands of the group.

The Pan-Pacific Union calls the first of these conferences, after which, if it is desired to do so, the delegates organize a new association. This was done and the Pan-Pacific Surgical Association was officially organized. It is to be an inclusive surgical organization, holding a meeting once in three years in Honolulu. At these meetings it is hoped that surgeons practicing in the different countries bordering on the Pacific will present the results of their research and study. Dr. George W. Swift of Seattle was named president, Dr. Nils P. Larsen of Honolulu first vice-president, Dr. F. J. Pinkerton of Honolulu secretary-treasurer, Dr. N. M. Benyas of Honolulu counsellor. A chairman and vice-chairman for each of the countries represented at this conference were named. Dr. Edgar L. Gilcreest of San Francisco was appointed chairman and Dr. Ralph Matson of Portland vice-chairman of the Pacific Coast States and Western Canada.

MEDICAL NOTES

OREGON

Medical Building Planned. Eugene is to have a modern nine story office structure devoted to physicians and dentists, according to plans announced recently by Mr C. A. Houghtaling, Portland architect. Bids for the new building, which is to cost $750,000, have been called for and construction is expected to begin in the near future.

Aviation Physician Chosen. Dr. Edmond H. Padden, well known Portland physician, has been appointed official surgeon for the Boeing School of Aeronautics at Oakland, Calif., and flight surgeon for the Pacific Air Transport Company and the western division of the Boeing Transcontinental Air Transport. He has established headquarters at Oakland.

French Specialist Entertained. Dr. Charles Richet, Jr,. assistant professor of medicine at the University of Paris, was the guest of the Portland Academy of Medicine at a dinner held Sept. 19 at the University Club. He later delivered an address in the Medical-Dental Building Auditorium on the subject, "Food Allergy."

Quack Eye Specialist Held. "Dr. "William McBride, self-styled eye specialist, who has recently been victimizing citizens of Washington and Yamhill counties, is to be extradited from Oregon to California, where four counts of larceny are held against him. He has been serving a sentence in the Imperial County, Calif., jail on a charge of practicing medicine without a license. McBride is alleged to have charged persons one hundred to two hundred and fifty dollars for eye treatments which did not improve their condition.

Orthopedists Visit Klamath Falls. Dr. E. C. Bull, chief surgeon of the Shriners' hospital at San Francisco, Calif., and Dr. A. Abbott, chief surgeon of the St. Louis, Mo., Shriners' hospital, were visitors at Klamath Falls early last month.

Hospital Enlarged. The sum of $25,000 is being expended in a program of enlargement and improvement at the Grande Ronde hospital in La Grande.

Lake and Klamath Counties Medical Society held the first regular fall meeting at Lakeview Sept. 4. Fourteen members were present. Dr. E. D. Everett, of Lakeview, related his experiences with tick fever in that district during the past summer. Dr. Charles Leithead, of Lakeview, spoke on the relationship of the State Industrial Accident Commission to private practice in industrial accidents.

Dr. H. T. Ground, formerly of Virginia, Minn., has become associated with Dr. E. H. McIntyre in the management of the Valley View hospital at Burns.

Dr. Sidney Kay, graduate of the University of Toronto School of Medicine, has located for practice at Salem.

Dr. Charles L. Knitter, formerly of the Sellwood hospital in Portland has accepted a position as pathologist at the Keizer Brothers hospital in North Bend.

WASHINGTON

Sedro-Woolley Hospital Opened. The new Sedro-Woolley Memorial hospital was formally opened by a public reception August 30. The institution culminates an intensive campaign begun over a year ago, in which citizens of the community were prevailed upon to contribute by subscriptions and the purchase of bonds a total sum of

$40,000 needed to finance the project. The building is two stories in height and of Spanish stucco design, and contains a modern surgery and x-ray plant. There are at present accommodations for twenty-two patients. Miss Constance K. Jay is superintendent.

Children's Hospital Opened. The new Julius Galland memorial hospital at the Spokane Children's Home was formally dedicated Sept. 11. The hospital, which was built at a cost of $15,000, provides space for twenty children. It is the gift of the trustees of the estate of the late Julius Galland, who left the major portion of his estate for religious and charitable purposes.

Health Program Planned. A subcommittee on health from the Bellingham Chamber of Commerce, together with city officials and citizens interested in public health, have been engaged recently in an attempt to unite the city and county public health activities in a single city-county department of health. If successful the plan would call for a full time health officer, a part of whose annual salary is promised by the American Public Health Association.

Campaign for Hospital Started. Members of a citizens' campaign committee were busily engaged during September in the sale of stock for the proposed new community hospital at Anacortes. A site at Tenth and B streets has been donated by the Great Northern Railway. The hospital is to cost $30,000.

Hospital Burned. The Clear Lake hospital at Clear Lake, was totally destroyed by fire Sept. 10. It had been unoccupied for several years, but its owner, Dr. C. H. Meadows, had expected to reopen it in the near future.

Snohomish County Medical Society held a meeting in the Medical-Dental Building at Everett Sept. 3. Dr. N. L. Thompson read a paper on "Observations in Obstetrics." A report on the recent state convention in Yakima was read by Dr. E. C. Leach of Arlington, official delegate from the local society.

Skagit County Medical Society held a meeting at Mount Vernon Sept. 13. Two Seattle physicians were guests of the society and presented scientific papers. Dr. C. F. Eikenbary spoke on "Fractures of the Elbow" and Dr. Willima Speidel discussed "Blood Transfusion."

Appointed to School Position. Dr. Thomas Morcom, of Seattle, has been appointed assistant to Dr. Ira C. Brown, medical director of the Seattle public schools.

Vancouver Hospital Completed. The new $115,000 Clark General hospital at Vancouver was opened by public reception Sept. 7-8. Space for fifty-three beds is provided.

Veteran Physicians Honored. A banquet in honor of "old timers" who are members of the Pierce County Medical Society was held at the Tacoma hotel in Tacoma Sept. 24.

Heads Sanatorium. Dr. H. L. Hopkins, a graduate of the University of Nebraska Medical School, has taken charge of the Cascade Sanatorium at Leavenworth.

Dr. W. W. Hicks, formerly house surgeon at St. Luke's hospital in New York, and Dr. Leopold Bowman, a graduate of the College of Medical Evangelists, have joined Drs. W. A. Taylor and J. P. Richards in their practice at Ellensburg.

Dr. X L. Anthony of Spokane recently underwent a serious operation at a Portland, Ore., hospital.

Dr. Forest A. Black and family of Seattle sailed for the Orient last month. After touring parts of Asia they will spend the remainder of a year in Europe. Dr. Black will study in the dermatologic clinics in leading cities of the British Isles and the continent.

Dr. Laura May Miller, a recent graduate of the Orange County, Calif., hospital, has been appointed assistant superintendent of the Walla Walla Sanatorium.

Dr. George A. Gray, Spokane physician, is convalescing from an operation performed at Sacred Heart hospital in Spokane.

Weddings. Dr. L. E. Lande of Spokane and Miss Caroline Rirsch of Chamberlain, S. D., were married at the home of the bride's parents August 26. Dr. Walter Bale Seelye of Seattle and Miss Elinor Bense of Walpole, Mass., were married July 4 at Brookline, Mass. Dr. William Forrest West, Jr., and Miss Sarah Margaret Sissions of Erie, Pa., were married in Mukilteo September 10. Dr. Frank S. Bourns of Seattle and Mrs. Elizabeth Ross Schonacker were married in San Francisco August 24.

IDAHO

Hospital Joins Amalgamation. The Mercy hospital at Nampa recently joined in a national amalgamation under the Sisters of Mercy of the Catholic Church.

Dr. John W. Stevenson of Moscow has moved to Longview, Wash., where he will engage in practice.

Sanatorium Opened. Dr. J. E. Froom of Boise, has opened a private sanatorium a few miles outside the city.

OBITUARIES

Dr. Peter Daniel McCornack, well known pediatrician of Spokane, Wash., died at his home August 26, following an illness of five days, aged 55 years. He was born at Traer, Iowa, in 1873, and graduated from Northwestern University Medical School, Chicago, Ill., in 1900. He located in Spokane shortly afterwards and remained in general practice there until 1913. He then spent two years in postgraduate study in pediatrics in Europe and on his return established himself in the practice of children's diseases, in which work he was one of the pioneers of the Pacific Northwest.

Dr. Arthur E. Burns, Seattle, Wash., died Sept. 3, in Beverly Hills, Calif., following an illness of several months, aged 63 years. He was born in 1866, and was graduated from Bellevue Hospital Medical College, New York, in 1886. For a number of years he was in general practice in Tacoma, locating in Seattle in 1907 as an eye, ear, nose and throat specialist. Since then he has been prominent in medical affairs. By his genial spirit and professional acumen, he had a host of friends among laymen as well as the medical profession.

Dr. Farrar William Skillern, Boise, Ida., died at his home August 25, aged 78 years. He was born in 1851 at Ray, Tenn., and graduated from Vanderbilt University Medical School, Nashville, Tenn. He spent the many years of his active practice in Texas and Oklahoma, and upon his retirement moved to Boise.

Dr. Henry F. Fleckenstein, Portland, Ore., died at his home September 16, following a brief illness, aged 58 years. He was born in Portland in 1870, and graduated from the University of Oregon Medical School in 1897.

REPORTS OF SOCIETY MEETINGS

WASHINGTON STATE MEDICAL ASSOCIATION

MINUTES OF THE FORTIETH ANNUAL MEETING OF WASHINGTON STATE MEDICAL ASSOCIATION, HELD AT CHAMBER OF COMMERCE, YAKIMA, WASH., AUG. 29-31, 1929.

The fortieth annual meeting of the Washington State Medical Association was convened at the Chamber of Commerce Bldg., Yakima, Aug. 29, 1929.

THE HOUSE OF DELEGATES

First Session

Friday, August 30

The House of Delegates was called to order by the President, Dr. F. H. Brush, at 8:30 a.m., August 30. On calling a roll a quorum was found present, the following delegates answering to their names:

F. H. Brush, A. E. Anderson, J. P. Schutt, J. H. O'Sbea, D. H. Houston, S. L. Caldbick, E. E. Hill, Geo. Anderson, C. L. Smith, S. A. Keim, W. M. Davidson, D. E. McGillivray, G. H. Coffin, O R. Austin, J. T. Dawson, H. D. Dudley, C. E. Watts, O. S. Proctor, Allen Bonebrake, W. B. Penney, Sidney McClain, A. C. Stewart, H. G. Willard, S. W. Holton, R. A. Quigley, N. L. Thompson, G. H. Anderson, H. E. Rhodehamel, I. S. Collins, C. R. Mowery, H. E. Nichols, J. T. Rooks, F. A. Wheaton.

Motion made and adopted that minutes of previous meeting be accepted as published in Northwest Medicine.

The secretary stated that it was customary to have the books examined by a certified public accountant on January 1 and July 1 of each year, and that there had been two audits since the last meeting.

Financial Report

To the Officers and Members, the Washington State Medical Association, Seattle, Washington.

Gentlemen:

Pursuant to engagement, we have made an audit of the books and records of the Washington State Medical Association, for the six months ending June 30, 1929, and now submit our report. As a part of this report, we have prepared and attach herewith the following exhibits:

Medical Association Fund	Exhibit A
Legal Defense Fund	Exhibit B
Disbursements M. A. F.	Exhibit C
Disbursements L. D. F.	Exhibit D
General Receipts	Exhibit E
Recapitulation Statement	Exhibit F

While these exhibits are, we believe, self-explanatory, we wish to make the following comments:

MEDICAL ASSOCIATION FUND

Receipts for membership dues for the period have amounted to $4,986.00, being remittances from 994 members. Four of these were paid twice and were refunded, 895 were for 1929 dues, 96 for 1928, and 3 for 1927. Ten 1929 dues were paid in 1928, this making a paid membership for 1929 of 905 members. We have credited this fund with 50 per cent of interest received, as shown by Exhibit E, $97.48, making a total receipts credited to this fund of $5,083.48. Disbursements from this fund have amounted to $3,191.54, as shown by Exhibit C; therefore showing an increase in this Fund of $1,891.94. This amount, added to your January 1 balance of $7,453.28, gives you a balance of $9,345.22 to the credit of this Fund at June 30, 1929.

LEGAL DEFENSE FUND

Receipts from subscribers to this Fund have amounted to $2,920.00 or 292 subscriptions during the period. We have credited this Fund with 50 per cent of interest received, as shown by Exhibit E, $97.47, making a total receipts of $3,017.47. Disbursements for the period have amounted to $1,219.03, as shown by Exhibit B, a net increase of receipts over disbursements of $1,798.44. This amount, added to your January 1 of $15,937.22, gives you a balance of $17,735.66 to the credit of this Fund at June 30, 1929.

RECAPITULATION STATEMENT

This Exhibit F shows total receipts from all sources of $8,100.95 and disbursements of $4,410.57, a net increase of receipts over disbursements of $3,690.38 for the period. This amount, added to your January 1 balance of $23,390.50, gives you a balance of cash and securities in the hands of your treasurer of $27,080.88 at June 30, 1929.

GENERAL

The bank balances have been satisfactorily reconciled with statements from the depositories. The bonds and other securities were inspected by us, all unpaid coupons being attached.

All disbursements have been made by voucher-check, drawn on your regular depository, have been properly endorsed and cleared through the bank in regular order. Invoices from parties to whom payments were made are on file properly ok'd and payment authorized by the President of the Association, or payments authorized by your minutes or by-laws.

CERTIFICATIONS

We hereby certify that the attached exhibits, together with the foregoing comments, are in agreement with your books and in our opinion are correct, and show the true condition of the two funds at June 30, 1929, and the correct amount of Receipts and Disbursements for the six months ending that date.

Respectfully submitted,
Louis E. Smith & Co.,
Certified Public Accountants.
(Signed) By Louis E. Smith, C.P.A.

On motion the audit was accepted.

Exhibit A

Medical Association Fund

Balance January 1, 1929		$7,453.28
RECEIPTS		
From membership dues for the six months ending June 30, 1929, by counties:		
Chelan, 13 members	$ 65.00	
Clallam, 14 members	70.00	
Cowlitz, 18 members	90.00	
Clark, 8 members	40.00	
Grays Harbor, 27 members	135.00	
Jefferson, 5 members	25.00	
King, 457 members	2,285.00	
Klickitat and Skamania, 7 members	35.00	
Lewis, 28 members	140.00	
Pacific, 7 members	35.00	
Pierce, 122 members	610.00	
Skagit, 24 members	140.00	
Spokane, 133 members	665.00	
Snohomish, 42 members	210.00	

Stevens, 2 members	6.00	
Walla Walla, 24 members	120.00	
Whatcom, 38 members	190.00	
Whitman, 3 members	15.00	
Yakima, 22 members	110.00	
Total members—994.		
Total receipts from members	4,986.00	
Add: 50 per cent of General Receipts, Exhibit E	97.48	
Total Receipts	$5,083.48	
Deduct: Disbursements, Exhibit C	3,191.54	
Increase in Fund		1,891.94
Total Balance to Credit of this Fund June 30, 1929		$9,345.22

Exhibit B

Legal Defense Fund

Balance January 1, 1929	$15,937.22

RECEIPTS

Subscriptions from members from the following counties for the six months ending June 30, 1929:

Benton, 1 subscriber	$ 10.00	
Chelan, 8 subscribers	80.00	
Clallam, 4 subscribers	40.00	
Clark, 1 subscriber	10.00	
Cowlitz, 3 subscribers	30.00	
Garfield, 1 subscriber	10.00	
Grays Harbor, 8 subscribers	80.00	
King, 138 subscribers	1,380.00	
Kitsap, 6 subscribers	60.00	
Lewis, 2 subscribers	20.00	
Mason, 1 subscriber	10.00	
Pierce, 22 subscribers	220.00	
Snohomish, 15 subscribers	150.00	
Spokane, 53 subscribers	530.00	
Skagit, 5 subscribers	50.00	
Stevens, 3 subscribers	30.00	
Walla Walla, 7 subscribers	70.00	
Whatcom, 4 subscribers	40.00	
Whitman, 3 subscribers	30.00	
Yakima, 7 subscribers	70.00	
Total members—292.		
Total receipts from members	2,920.00	
Add: 50 per cent of General Receipts, Exhibit E	97.47	
Total Receipts	$3,017.47	
Deduct: Disbursements Exhibit D	1,219.03	
Increase in Fund		1,798.44
Total Balance to Credit of this Fund		$17,735.66

Exhibit C

Medical Association Fund

DISBURSEMENTS

Aetna Ins. Co., secy.-treas. bond	$ 60.00
Lumbermen's Prtg. Co., envelopes	17.50
Ward's Bindery, ledger sheets	27.50
Dr. W. Ray Jones, committee expenses	27.54
Louis E. Smith & Co., auditors	150.00
Cash for postage	20.00
Metropolitan Natl. Bank, safe deposit box	4.00
Spokane Floral Co., flowers	10.00
Geo. W. Rourke Ins. Agency, burglary and robbery insurance	27.00
Dr. C. H. Thomson, six months clerical allowance	750.00
Dr. C. H. Thompson, nine months office rent	180.00
Northwest Medicine, medical journal subscriptions	1,898.00
Pierce County Society, refund dues paid twice	5.00
Pierce County Society, refund dues paid twice	5.00
Walla Walla Valley Society, refund dues paid twice	10.00
Total to Exhibit A	$3,191.54

Exhibit D

Legal Defense Fund

DISBURSEMENTS

Legal fees and expenses:		
Libby vs. Dr. H. T. Buckner—		
J. Speed Smith	$ 6.00	
50 per cent paid by Aetna Ins. Co.	3.00	$ 3.00
Dr. McCormick vs. E. O. Jones—		
J. Speed Smith	154.00	
50 per cent paid by Aetna Ins. Co.	77.00	77.00
Trenholmes vs. Dr. Harmon—		
J. Speed Smith, fees and costs	166.50	
50 per cent paid by Aetna Ins. Co.	83.25	83.25
McCarthy vs. Marshall and Murray—		
J. Speed Smith, fees and costs	162.75	
50 per cent paid by Aetna Ins. Co.	81.37	81.38
Ludwig vs. Dr. Taylor—		
J. Speed Smith, fees and costs	408.00	
Dr. Jacobson, expert witness	112.70	
Dr. J. Tate Mason, expert witness	200.00	
Nina Severyns, reporter	12.50	
	733.20	
50 per cent paid by Aetna Ins. Co.	366.60	366.60
Giles vs. Langworthy—		
Cannon, McKevitt and Fraser, fees and costs	403.00	
50 per cent paid by Aetna Ins. Co.	201.50	201.50
Challender vs. Dr. Robinson—		
Cannon, McKevitt and Fraser, fees and costs	812.60	
50 per cent paid by Aetna Ins. Co.	406.30	406.30
Total to Exhibit B		$1,219.03

Exhibit E

General Receipts

Interest received:	
Washington Mutual Savings Bank	$119.75
Puget Sound Savings and Loan Assn	75.00
Total	$194.95

Note: Due Interest Coupons on Loans were not clipped and deposited in bank until July 2.

Divided:	
50 per cent to Medical Association Fund, Exhibit A	$ 97.48
50 per cent to Legal Defense Fund, Exhibit B	97.47
Total	$194.95

Exhibit F

Recapitulation Statement

Cash and Securities on hand January 1, 1929			$23,390.50
Gross Receipts for six months ending June 30, 1929:			
Membership Dues, Exhibit A		$4,986.00	
Legal Defense Subscriptions, Exhibit B		2,920.00	
Interest Received, Exhibit C		194.95	
Total Receipts		$8,100.95	
Disbursements:			
Medical Association Fund, Exhibit C	$3,191.54		
Legal Defense Fund, Exhibt D	1,219.03		
Total Disbursements		$4,410.57	
Excess Receipts over Disbursements			$ 3,690.38
Total Cash and Securities on hand June 30, 1929			$27,080.88
Cash and Securities on hand made up as follows:			
Cash			$ 20.00
Balance Open Account, Metropolitan Natl. Bank			6,788.26

Washington Mutual Savings Bank	5,451.37
Puget Sound Savings & Loans Assn.	5,000.00
Dominion of Canada Bond	1,002.50
American Smelting & Refining Co.	1,026.25
General Petroleum Co. Bond	1,017.50
Standard Oil Co. Bonds	1,922.50
Canadian National Ry. Bonds	1,965.00
Southern Counties Gas Co. Bond	947.50
St. Louis & San Francisco Ry. Bonds	1,940.00
Total	$27,080.88

Report of Conservation of Vision Committee

There have been no attempts at adverse legislation in this State during the past year, which would in any way interfere with the proper care and prevention of blindness. It is of supreme importance that the medical profession continue to educate the public along the lines which will best promote the safeguarding and preservation of the vision of the present and coming generations.

During the early part of the year Miss Mildred G. Smith, of the Executive Staff of the National Society for the Prevention of Blindness, made a survey of the conditions in this State relative to the conservation of vision, during which time she gave instructive talks with demonstration of methods for the examination of the school children and of those who have not yet arrived at this age of discretion. These lectures were given before an interested public, such as school nurses, oculists, etc.

One of the members of the committee, Dr. Ed. E. Maxey, suggests further education of the public relative to the wearing of protective glasses for laborers in the lumber industry, as he has treated several severe eye injuries among laborers who work in the woods.

Through the auspices of the University of Washington, your chairman had the privilege to present this important subject to the members of the Social Welfare League of the Seattle and Tacoma chapters, there being more than forty enthusiastic Social Welfare workers present.

Respectfully submitted,
E. F. Chase, M.D., Chairman.

Report of Social Hygiene Committee

Dr. W. Ray Jones presented the report of the Social Hygiene Committee.

The Social Hygiene Committee began by making a survey of conditions in Washington, and came to the conclusion that in this way our State is far in advance of the rest of the country. We studied 18,388 Wassermanns made in the State Department of Health laboratory. We studied the records of 752 prostitutes in Seattle as to disease incidence, etc. The results of both of these are shown in tables published elsewhere.

We carried on an extensive educational program on sex hygiene and eradication of venereal disease. The U. S. Public Health Service furnished us twelve sets of Brayco films on the Science of Life, and a lantern for showing the same. We collected some lantern slides ourselves and the State furnished us some upon which we formed four lectures. All these we in turn loaned to schools and physicians who would use same.

We furnished speakers .and pictures for school work, lodge meetings, church meetings, Y.M.C.A., Y.W.C.A., boys' clubs, the Navy, labor unions, hospital nurses, etc.

Deceased Members

The secretary then reported the following deceased members:

Shute, Frederic V., Bellingham; 1880-1928; U. of Colo. School of Med., 1903.
Harvison, David B., Seaview, 1861-1928; Barnett Medical College, 1895.
Preston, Miller Edwin, Spokane; 1879-1928; Denver & Gross College of Med., 1903.
Fleischer, Henry Jacob, Des Moines; 1857-1928; Rush Medical College, 1879.
McDowell, George Kerr, Spokane; 1865-1929; Trinity Med. College, 1892.
Smith, Wallace Alonzo, Seattle; 1876-1928; Hosp. Col. of Med., Louisville, Ky., 1907.
McNerthney, John B., Tacoma; 1874-1928; Univ. of Minn., 1899.
Johnston, John, Ritzville; 1867-1928; Univ. of Penn., 1908.
Vail, David Wilbur, Seattle; 1847-1928; Western Reserve Univ., 1869.
Wilbur, Seattle; 1847-1928; Western Reserve Univ., 1869.
Allison, George S., Spokane; 1848-1928; Wash. Univ., 1871, Bellevue Hosp., 1881.
Wilson, Wm. Chas., Tacoma; 1882-1928; Northwestern, 1907.
Chappell, Frank, Granite Falls; 1847-1928; Univ. of Mich., 1881.
Smith, Howard Hamilton, Yakima; 1867-1928; Cleveland Univ., 1895.
Bridenstein, Sylvester J., Seattle; 1851-1929; State Univ. of Iowa, 1875.
Walker, Joseph J., Opportunity; 1884-1929; St. Louis Col. of Phy. & Sur., 1908.
Robinson, Gilbert P., Spokane; 1900-1929; Loyola Univ. School of Medicine, 1926.
Ganson, Lee, Yakima; 1871-1929; Rush Med. College, 1894.
Marshall, Herman Price, Spokane; 1882-1929; Harvard Univ., 1904.
Stafford, E. A., Snohomish; 1859-1929; Rush Med. College, 1888.
Phillips, Frederica, Seattle; 1854-1929; Univ. of Neb., 1898.
Wolf, John T., Seattle; 1875-1929; St. Louis School of Med., 1905.
Ahlman, Enio R., Hoquiam; 1872-1929; Univ. of Leningrad, 1897.
Brobeck, Christian John, Tacoma; 1883-1929; Univ. of Mich., 1907.
Titus, Stanley, Spokane; 1880-1929; Geo. Wash. Univ. Med. School, 1907.
Heston, Edward Calder, Roslyn; 1884-1929; Northwestern, 1909.
Simon, Hilda A., Seattle; 1871-1929; Col. of Phy. & Sur., San Francisco, 1905.
Fryer, H. M., Omak; 1886-1929; Kansas City Med. Col., 1896.
McCornack, Peter Daniel, Spokane; 1873-1929; Northwestern, 1900.

Motion was made and adopted that the president appoint a committee to draw up a resolution for the deceased members. The following committee was appointed: H. G. Willard, chairman; O. S. Proctor, H. E. Rhodehamel, J. T. Rooks.

Motion was made and adopted that a committee be appointed to make recommendations in regard to the handling and safeguarding of the funds of the State Association. The President appointed the following committee: D. H. Houston, chairman; C. L. Hagyard, E. W. Jones, A. E. Anderson, C. L. Smith.

Report of Committee on Conservation of Vision

Dr. Chase presented the report of the Committee on Conservation of Vision.

Through the efforts of the National Society for the Prevention of Blindness and the various State organizations, including the State of Washington, a great deal has been accomplished for the prevention of blindness, especially that resulting from disease such as ophthalmia neonatorum, and those injuries due to industrial accidents. It is gratifying to note that blindness resulting from ophthalmia neonatorum throughout this country has been reduced from 28 2/10 to 9 1/10 per cent during the last thirty years. It is also gratifying to note that, although there are probably many more industrial accidents, yet workmen in our large factories are more adequately cared for in the way of prevention and treatment than at any time hitherto.

We went before medical societies, representing half the doctors of the state, with a plea for reporting venereal diseases, as the law requires, and distributed the blanks for same.

We kept on hand stock addresses with slide illustrations on venereal diseases, suitable for filling in last minute gaps in medical society programs. We responded thus for six county societies.

We tried to bring to life the Washington Social Hygiene Society, and voluntarily failed. Our supporters were not of the kind who would reflect credit on the medical profession as sponsors. We took subscriptions for the government bulletin, Venereal Disease Information.

The basic principle of our activities has been to make contacts between the public and the doctors, that they give the social hygiene information. To this end we furnished speeches, pictures, and made the engagement for the doctor speaker, all with much success.

Sugggestions for the future: That at least one woman be included on the next committee, since found she can establish contacts where a man cannot.

One who is either a health officer or connected with the State Department of Health should be included to give standing, and avoid possible legal complications.

Close cooperation with the Public Health League is very desirable.

Respectfully submitted,
W. Ray Jones, M.D.
Chairman.

Dr. Carroll Smith offered a motion that the present limit on the number of papers be set aside and that the number of papers may be determined by the Program Committee. This motion was laid on the table for one day.

Motion made that a committee on Medical Economics be appointed. The President appointed the following: Dr. Taylor, chairman; Drs. E. E. Hill, H. G. Willard, F. A. Wheaton, S. E. Lambert.

The meeting then adjourned.

SECOND SESSION

August 31

Meeting called to order by the President at 8:30 a.m.

On calling the roll, the following delegates answered to their names:

F. H. Brush, A. E. Anderson, J. P. Schutt, C. H. Thomson, J. H. O'Shea, D. H. Houston, S. L. Caldbick, E. E. Hill, Geo. Anderson, C. L. Smith, P. J. Gallagher, S. A. Keim, W. M. Davidson, D. E. McGillivray, G. H. Coffin, O. R. Austin, C. R. Castlen, E. F. Chase, J. T. Dawson, H. D. Dudley, D. G. Dickerson, R. L. Jeffery, J. T. Mason, D. A. Nicholson, O. S. Proctor, V. W. Spickard, C. E. Watts, Allen Bonebrake, H. G. Willard, W. B. Penney, A. C. Stewart, Sidney McClain, S. W. Holton, N. L. Thompson, R. A. Quigley, G. H. Anderson, I. S. Collins, C. R. Mowery, H. E. Rhodehamel, H. E. Nichols, J. T. Rooks, F. A. Wheaton.

The following resolutions in regard to deceased members were then presented and adopted:

"In the last year we, the members of the Washington State Medical Association, have lost the friendly contact and worthwhile professional comradeship of several of our former workers.

"We regret their passing more than mere words can say, and also feel that the whole State has lost by the departure of these men who cut short their lives through the strenuous efforts to be of use to their communities and their patients during times of strain and stress.

"As we voice our own sense of sorrow and obligation, we also offer sympathy to the families and close associates of those who comprise our roll of death."

Motion was made and adopted granting the program committee authorization to determine the number of papers at any session.

Motion made and adopted that the Fellows of the State Association be given a suitable diploma or certificate.

On motion the following resolution presented by Dr. Rhodehamel was accepted:

"A resolution that the revocation of license of any licensed physician convicted of a felony or who for any other reason is unfit to practice medicine in the State of Washington shall be referred to the Association's attorney for such action as shall terminate the right of such person to practice in this State."

On motion Bellingham was selected as the next place of meeting.

Election of Officers

The following officers were then elected: (Those whose terms did not expire are added to complete the list.)

Pres., Dr. H. E. Cleveland, Burlington, term expires 1930.
First Vice-Pres., Dr. A. E. Anderson, Aberdeen, term expires 1930.
Second Vice-Pres., Dr. J. R. Morrison, Bellingham, term expires 1930
Secy.-Treas., Dr. C. H. Thomson, Seattle, term expires 1931.
Assist. Sec.-Treas., Dr. J. H. O'Shea, Spokane, term expires 1931.

TRUSTEES

First District

Dr. S. L. Caldbick, Everett, term expires 1930.
Dr. D. C. Hall, Seattle, term expires 1930.
Dr. D. H. Houston, Seattle, term expires 1931.
Dr. D. G. Dickerson, Seattle, term expires 1931.

Second District

Dr. C. L. Smith, Spokane, term expires 1930.
Dr. P. J. Gallagher, Spokane, term expires 1930.
Dr. Geo. Anderson, Spokane, term expires 1931.
Dr. E. Hill, Walla Walla, term expires 1931.

Journal

Dr. H. E. Rhodehamel, Spokane, term expires 1930.
Dr. I. S. Collins, Spokane, term expires 1930.
Dr. J. T. Rooks, Walla Walla, term expires 1930.

Delegates to A. M. A.

Dr. Frederick Epplen, Seattle, term expires 1930.

Dr. D. E. McGillivray (alt.), Port Angeles, term expires 1930.

Dr. J. H. O'Shea, Spokane, term expires 1931.

Dr. Chas. Mowery (alt.), Spokane, term expires 1931.

The House of Delegates adjourned sine die.

Exhibits

In the registration hall were presented a number of exhibits. Those of special interest showing careful detailed work by physicians were the following:

"Bacterial Origin of Goiter." Dr. E. O. Houda, Tacoma.

"Pathology of Goiter." Dr. J. Earl Else, Portland.

Work of the Antituberculosis League.

SCIENTIFIC PROGRAM

Friday, August 30

9:30 a.m. "Diabetes. A Statistical Study of 300 Cases." Dr. Lester L. Palmer, Seattle.

Discussion by Drs. J. W. Ingram, J. P. Richardson, Geo. Anderson and W. L. Pennock.

"Bladder Neoplasm." Dr. W. L. Pennock, Spokane.

Discussion by Drs. Engels, Else, Fitzgibben, Ross and Sweet.

"Tuberculosis of Hip Joint." Dr. C. F. Eikenbary, Seattle.

Discussion by Dr. A. B. Shaw.

11:30 a.m. "Symposium of Public Health League." Drs. W. B. Penney, Tacoma; A. C. Crookall, Seattle; S. E. Lambert, Spokane.

12:30 p.m. Annual Meeting and Public Health League Luncheon.

2:00 p.m. "Hemorrhage from Upper Gastrointestinal Tract." Dr. H. L. Bockus, Philadelphia.

Discussion by Drs. Geo. Anderson, W. B. Penney, Fitzgibben, P. W. Willis, J. T. Mason, W. A. Swalm and J. E. Else.

"Intracranial Hemorrhage." Dr. D. G. Dickerson, Seattle.

Discussion by Dr. J. E. Else.

"Medical Defense and Damage Suits." Mr. Edward J. Cannon, Spokane.

"Cistern Puncture in Treatment of Cerebrospinal Meningitis." Dr. A. L. Balle, Seattle.

6:00 p.m. Lawn Party and Dinner Dance. Dr. John Kloeber's country home.

Saturday, August 31

9:30 a.m. President's Address. Dr. F. H. Brush, Spokane.

"Status of Organized Medicine in the State of Washington." Dr. J. T. Rooks, Walla Walla.

Discussion by Drs. S. E. Lambert, E. E. Hill, I. S. Collins, W. R. Jones, A. E. Stuht.

"Cautery of Cervix Uteri." Dr. A. B. Shaw, Longview.

Discussion by Drs. Cleveland, Gerhardt, F. H. Brush and Skinner.

"Pitkin's Solution and Sodium Amytal as Anesthetic Agents." Dr. J. T. Mason, Seattle.

Discussion by Drs. Matthews, Storgaard, Else, E. E. Hill, A. E. Anderson and Edmonds.

"Symposium of Tuberculosis Committee." Dr. Frederick Slyfield, Seattle.

2:00 p.m. "Chronic Duodenal Stasis." Dr. H. L. Bockus, Philadelphia.

Discussion by Drs. Bird and Lewis.

3:00 p.m. Canti Films. Dr. H. B. Thompson, Seattle.

3:45 p.m. Diagnosis of Galltract Disease. (With motion picture illustration of the proper Lyon technic.) Dr. Wm. A. Swalm, Philadelphia.

A motion was unanimously adopted that the thanks of the Association be extended to Drs. H. L. Bockus and W. A. Swalm of Philadelphia and Dr. H. B. Thompson of Seattle for their contributions to the success of the program.

Curtis H. Thomson, M.D.,
Secretary.

PIERCE COUNTY MEDICAL SOCIETY

Pres., C. F. Engels; Secty., W. B. Penney

The regular meeting of Pierce County Medical Society was held in the Washington Building, Tacoma, Wash., September 10, President C. F. Engels in the chair. Minutes of the previous meeting read and approved.

PROGRAM

Case report: "Laryngeal Tracheal Bronchitis, Treated by Tracheotomy, with Recovery," by W. C. Paul. Discussed by Dr. D. M. Dayton.

"Surgical Treatment of Carcinoma of the Uterus and Cervix," by Dr. H. G. Willard.

"Radiologic Treatment of Carcinoma of the Uterus and Cervix," by Dr. S. M. MacLean.

These papers were discussed by Drs. Hermann, Dodds, Mattson, Swearengen and Griffin.

Dr. Hopkins made a short talk in regard to the need of the doctors supporting the proposed additional three-mill school levy.

BUSINESS

The applications of Drs. H. W. Newell, Hillis F. Griffin, S. F. Herrmann and John N. Alley were read. The applications of Drs. Newell and Griffin were referred to the Board of Trustees. Dr. John N. Alley was voted a member of the society because of his affiliation with the United States Tacoma Hospital. Dr. S. F. Herrmann presented a transfer from the Olmstead County Medical Society of Minnesota.

A communication was read from the Council on Medical Education and Hospitals.

Dr. Buis made an announcement of a banquet to be held on September 24 in honor of the old timers of the society.

SPOKANE COUNTY MEDICAL SOCIETY

Pres., Carroll Smith; Secty., R. M. Schulte

The regular meeting of Spokane County Medical Society was held at the Silver Grill, Spokane, Wash., Thursday, September 12, with 92 members and guests present.

Dr. William J. Pennock read an interesting paper on "Pathology of Nephritis." He reviewed the recent work on this subject gained during his six months stay in Vienna.

Dr. J. Tate Mason of Virginia Mason Hospital, Seattle, read a very human paper on "Pitkin's Solution and Sodium Amytal" as anesthetic agents. He reviewed a series of cases run in his hospital, using Pitkin's solution as intraspinous anesthesia and of sodium amytal as intravenous. He pointed out the advantages of each, telling the effects obtained and warning against the pitfalls of their use.

Dr. W. E. Newman was elected to membership.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

Bodily Changes in Pain, Hunger, Fear and Rage. An Account of Recent Researches into the Function of Emotional Excitement. By Walter B. Cannon, M.D., S.D., LL.D. George Higginson, Professor of Physiology at Harvard University. Second Edition. Cloth. 404 pp. D. Appleton and Co., New York and London, 1929.

Most of Cannon's work revolves about the augmented discharge of adrenin in emotional excitement and the various useful physiologic functions that follow its addition to the blood. One is continually struck with not only the extraordinary ingenious technic and originality of the apparatus used in his animal experiments but in the even greater ingenuity and logic employed in interpreting his results. Apart from a requisite masterly knowledge of anatomy and manual dexterity in performing the most delicate operations, the great physiologist must possess a powerful imagination together with a clear and impartial, logical mind capable of making indisputable deductions. All these qualities the author possesses.

The book begins with an unusually clear and simple description of the autonomic nervous system, with a schematic diagram showing that, while the sympathetic division is not in direct touch with the organs, its impulses are relayed through ganglia and act as a whole on all parts of the body; the cranial and sacral divisions connect directly with the organs to which they are distributed and have a specific action. Or, as he cleverly puts it, "the sympathetic is like the soft and loud pedals modulating all the notes together; the cranial and sacral autonomic are like the separate keys." Then he goes on to show how emotional excitement causes nervous discharges to be sent out over the sympathetic division with, among other effects, stimulation of the adrenals and increased secretion of adrenin.

Briefly this sudden secretion of adrenin in times of stress has all the effects on the body seen after its injection. A good part of the book is devoted to experiments proving that such effects do follow emotional excitement from direct stimulation of the adrenals through the sympathetics, while the sudden consequent secretion of adrenin into the blood both augments and prolongs the same activities that are produced by sympathetic stimulation. The secretion of adrenin then cooperates with sympathetic impulses in calling forth within a few minutes stored glycogen in the liver, flooding the blood with sugar; it helps in distributing blood to the heart, lungs, central nervous system and limbs. This it does by increasing general blood pressure through contraction of the abdominal and the peripheral vessels and thus forcing blood into the brain, heart and lungs (where it also overcomes contraction of the bronchioles), and into the dilated vessels of contracting voluntary muscles. Adrenin quickly abolishes muscular fatigue by stimulation of the motor nerve endings in the muscle, and renders blood more rapidly coagulable.

Subsequent chapters are devoted to the utility of these effects of sympathetic stimulation and adrenin discharge into the blood in times of emotional stress. There is besides a sudden increase of erythrocytes in great emotional excitement, amounting to 20 or 30 per cent, due to contraction of the spleen from sympathetic stimulation and adrenin discharge into the blood. It may be readily seen that all these effects are precisely what would be required in great muscular exertion as in flight or fight.

In a separate chapter appears a very interesting discussion of the interrelations of the emotions. Thus two of the three divisions of the autonomic nervous system, the cranial, sympathetic and sacral, are always in opposition, when the neurones of the mid-division meet in any organ the neurones of either of the end-divisions. This is seen in the eye and the heart. The cranial supply contracts the pupil, the sympathetic dilates it; the cranial slows the heart, the sympathetic accelerates it. In relation to the sexual act the nervi erigentes of the sacral autonomic supply are opposed by sympathetic action and thus is sexual excitement at once inhibited by another strong emotion.

There are chapters on the causation of hunger and thirst, the solution of which is due largely to the author. Finally it is shown that the probable centers of the emotions reside in the region of the optic thalamus, as demonstrated by experimentation and known clinical facts.

After demonstrating throughout the book the force of the fighting emotions, and the supreme degree of mental and bodily energy which they call forth, the author goes on to show in closing how these same emotions may be put to advantage in civilized life instead of resorting to the age-old barbarian carnage and destruction of the flower of the race. It is generally appreciated that the most manly qualities are nurtured by military training and combat, but these same characteristics may be obtained in civil life. Thus "England's battles have been won on the playing fields of Rugby and Eton." So the writer urges that, as modern warfare conducted at long range and often out of sight of the enemy has done away with many of the circumstances leading to individual excitation of the fighting emotions, they may be called forth to much better advantage and our youth may still acquire the same manly qualities of hardihood, courage, and discipline by competitive athletic combats. The book will be read with great interest by all medical men, to whom it will also afford insight into the mysterious wonders of the autonomic nervous system. The author has avoided technicalities so far as possible so that work may be comprehended by any intelligent layman without in any way sacrificing its scientific worth, a most difficult feat only to be accomplished by a master.

Winslow.

Clinical Laboratory Methods. By Russell Landram Haden, M.A., M.D. Professor of Experimental Medicine, University of Kansas School of Medicine, Kansas City, Kan. With 69 Illustrations and 4 Color Plates. Third Edition. 317 pp. $5. The C. V. Mosby Co., St. Louis, 1929.

To properly evaluate a book requires considerable time. One may hastily glance through it, noting in a general way its contents and, selecting a page or paragraph here and there, form an idea of the manner and clarity of presentation of its subject matter. The most accurate estimation of the value of a text, in addition to the above, is to keep it at hand and refer to it, when some question of technic or methods comes up. It is surprising in what a large percentage of cases disappointment will result. Either the matter is entirely overlooked or is presented in a hazy and indefinite manner which is of little benefit. During the time this volume has been in use the laboratory workers have been encouraged to use it for reference, and the results have been noted. These have been generally pleasing.

As the title implies, the book is one of methods, and theoretical matter, except as it applies to methods, is not considered. Excluding this, a reference with a desire to learn how a test is done is almost invariably rewarded by a concise description of the technic to be employed, and the reagents and material to be used. A single but grave exception is that of sedimentation time of erythrocytes, a valuable procedure which is entirely omitted.

The majority of laboratory tests which are described in texts on this subject are too well standardized to give value to a general enumeration of those contained in a given book. Sufficient to say that in this volume the subject is well covered, clearly presented and easily understandable. It is recommended to those wishing an up-to-date text on laboratory methods. CEFALU.

THE CHALLENGE OF CHRONIC DISEASES. By Ernst P. Boas, M.D., Attending Physician, Montefiore Hospital for Chronic Diseases, and Nicholas Michelson, Adjunct Physician, Montefiore Hospital for Chronic Diseases. 197 pp. $2.50. The Macmillan Company, New York, 1929.

The problem of caring for victims of chronic diseases is vital in all large cities. In a leading city of the East the records of a large clinic show that fifty-eight per cent of the patients have been sick for more than six months prior to their application for treatment. The scope of the problem is indicated by the types of existing institutions, such as homes for incurables, almshouses, city infirmaries, homes for the aged and infirm. Insanity and tuberculosis are responsible for so much illness that special institutions are commonly provided for treatment of patients thus afflicted. Otherwise the chronically sick include cases of arthritis, Bright's disease, diabetes, cancer and similar ailments that are not subject to actual cure but may be alleviated by suitable treatment. When laborers and many salaried men become victims of these diseases their resources are soon exhausted and usually they become a charge on the public. The authors discuss medical aspects of chronic diseases and consider their economic and social factors. Attention is called to the almshouse which still shelters these patients in some counties. It may be surprising to know that the barbarous, inhuman practices of the past still exist in some of these institutions. While some of these patients may be cared for at home under suitable supervision, the hospital is a necessity for the great majority of them. The public, however, is not yet generally educated to the necessity for such institutions. The authors describe in detail the various features needed for their construction, administration and maintenance. This book is intended not only to be read by physicians but laymen, upon whom the chief responsibility will fall for provision of these much needed hospitals. One interested in this form of philanthropy will find here much of interest.

THE PRINCIPLES OF ELECTROTHERAPY and Their Practical Applications. By W. J. Turrell, M.A., D.M., B.Ch. (Oxon.), D.M.R., & E. (Cantab.). Physician in charge of the Physiotherapy Department, Radcliffe Infirmary, Oxford, etc. Second Edition. 413 pp. $4.75. Oxford University Press, London and New York, 1929.

Many exaggerated and unwarranted claims have been propounded for the employment of various phases of physical therapy. The exposure of some of these has brought this form of treatment into disrepute. If one desires a clear, conservative and dependable discussion of this subject, he will find it in this volume. The author states it is the outcome of an attempt to explain the therapeutic action of electricity upon rational grounds and physiologic principles. After a brief presentation of the history of electrotherapy, there are chapters on its general principles, the constant current, low frequency, high frequency and the static current.

The profession at large is unfamiliar with the useful therapy from the galvanic current in many diseased conditions, especially of nerves. One will discover this subject presented to his satisfaction in this book. The author very emphatically controverts the claim of ionizing results in the deep tissues and joints. By means of the galvanic current some drugs may be transmitted to slight depth beneath the surface but not into the deep tissues. At the same time results are obtained from the electrolytic action with suitable amperage and periods of application. Electrodiagnosis is a very important feature of this work. The author clearly presents the fields of application of the faradic and galvanic currents for diagnostic purposes as well as subsequent therapy. One is impressed with the fact that the galvanic current correctly employed is a most useful agency in many otherwsie intractable conditions.

The static current reecives due attention. As a decongester it occupies a field which can be filled by no other electric agency. Its combination with other measures is presented with timely suggestions. Radiant heat and ultraviolet radiation are fully described, with the fields for their applications. Nearly half of the volume is devoted to the employment and modes of action of electricity in specific diseased conditions. Diseases of muscles, joints, the nervous and respiratory systems are considered in turn, the proper treatment for each being outlined. One notes the fact that the author is not carried away with an excess of enthusiasm, but states the results of treatment from an extensive personal experience. This book can be highly recommended to every student of electrotherapy as a guide for the practical applications of this form of treatment.

A TEXTBOOK OF PHARMACOLOGY AND THERAPEUTICS. By Hugh Alister McGuigan, Ph.D., M.D., Professor of Pharmacology and Therapeutics, University of Illinois, College of Medicine. Illustrated. 660 pp. $6.00. W. B. Saunders Company, Philadelphia and London. 1928.

"The aim of this book is to present clearly the important facts of pharmacology, and to give the basis for these facts." The author states that in this volume he has made an attempt to connect physiology, biochemistry and pharmacology with clinical application. To accomplish this end he has made free use of authorities, especially in clinical applications. The introduction presents the basic facts concerning theories and modes of pharmacologic action, absorption and other features relative to drugs. The actions of drugs may be physical, as shown in those in which no chemical reaction occurs between the drug and the tissues. Chemical actions may be exerted by combination, when there is a direct union of the drug with the body tissue or substitution may occur, as when hydrochloric acid of the stomach is neutralized by sodium bicarbonate. Under "special pharmacology" drugs are grouped according to their

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THE PEDIATRICIAN'S FORMULA

The first suggestion for the preparation of Mead's Dextri-Maltose came from pediatricians. Naturally their preference for this particular form of carbohydrate is back of its very conception. Dextri-Maltose brings mothers with their babies back to your office, not only because of its clinical results but because it satisfies the mother that her baby is receiving individual attention, that it is getting "a formula."

FIND RADIUM WATERS ARE VALUELESS

Drinking waters supposed to contain radioactive substances have been widely advertised in the past few years as cures for various ills. Today all sort of radium solutions are offered both to the physician and to the public with loud claims as to their virtue in the treatment of arthritis, neuritis, gout, anemia, leukemia, blackheads, pimples and what have you, according to an editorial in *Hygeia*.

Actually many of these contain insufficient radium to have any appreciable effects. Now, after watching the development of these preparations carefully for several years the Council on Pharmacy and Chemistry of the American Medical Association in a recent report expresses the conviction that the value of radium solutions in the treatment of disease is not demonstrated by dependable evidence. Thus the council dismisses the claims of the promoters with the opinion that even if their products contained radium there is no evidence that they would have any value.

important actions, as irritants, expectorants, heat regulation, anesthetics, purgatives, etc. After giving the origin of the drug and describing its chemical actions and combinations its clinical applications are briefly enumerated. Thus, under the "digitalis series" the various digitaloid substances are mentioned, the most important of which is digitalis. Its action is given in detail on the heart, vessels, stomach, kidneys, etc., with its therapeutic actions in the various forms of cardiac disease. Describing drugs affecting the nervous system, there is a chapter on the pharmacology of the motor nerve endings to striated muscles, discussing the action of curare, cocaine and its various substitutes. Naturally there follows a description of drugs acting on sympathetic nerve endings, dealing with epinephrine and ephedrine. There are fascinating descriptions of well known drugs and their actions, such as ergot, pituitrin, the opium series and others. However well posted one may consider himself on pharmacology and the therapy of drugs, he will obtain valuable information by consulting this volume.

Rickets Including Osteomalacia and Tetany. By Alfred F. Hess, M.D., Clinical Professor of Pediatrics, University and Bellevue Hospital Medical College. Illustrated. 485 pp. Cloth, $5.50. Lea & Febiger, Philadelphia, 1929.

This monograph is written by one of the foremost American authorities in the field of rickets, who has taken a prominent part in solving the relationships of the disease to diet as well as to solar radiation and its recently discovered substitute, irradiated ergosterol. The beginning chapters are devoted to a history of rickets, pathology, etiology and experimental rickets in animals. Symptomatology and diagnosis by physical and x-ray examination are then taken up. The chapter on treatment is timely for, in addition to a consideration of the use of cod liver oil, sunlight and artificial ultraviolet light therapy, the author gives a full discussion of the therapeutic advantages and the technic of administration of irradiated ergosterol in the prevention and cure of rickets.

Infantile tetany is described in detail, together with the latest modes of treatment. There is an excelent review of osteomalacia, in which is included "war osteomalacia" or "hunger osteomalacia," frequently observed among partially starved populations after the World War. The author has written exhaustively and authoritatively on rickets and its allied conditions and his monograph is recommended to all who are concerned with this problem.

Olmsted.

Heliotherapy. With Special Consideration of Surgical Tuberculosis. By A. Rollier, M.D. Translated by G. de Swietochowski, M.D., F.R.C.S. 318 pp. $6.25. Oxford University Press. London and New York, 1927.

This highly inspiring book deals with the author's twenty-seven years work in so-called surgical tuberculosis by which he means all nonpulmonary cases. He credits the sunlight of the Swiss Alps with clinical results incomparably superior to those attained elsewhere. He uses various forms of orthopedic apparatus, such as may be seen in any orthopedic institution, but he decries the surgical "mutilations" which form the regular procedure in all other parts of the world.

The book is profusely illustrated with photographs which arouse both praise and envy, but the tabulations indicate such incredible success as to create in the reader's mind a fear of overenthusiasm on the part of the statistician. Where else, for example, can one find a series of ninety-six cases of spondylitis with abscess, in which 83 per cent have been healed, another 14 per cent improved and only 2 per cent have died. Again in forty-five cases of spondylitis with pulmonary tuberculosis the author's statistics show healing in nearly 70 per cent in spite of his admitted recognition of the fact, which we have all learned, that sun light is of uncertain value in phthisis and frequently does a lot of harm.

No one of good training and a few years experience doubts the advantage of isolation in surgical tuberculosis and this is extensively employed on every hand, but a study of this fascinating work leads inevitably to a suspicion that perhaps we have not given the sun full credit for its worth and to the hope that, since at least part of the time every portion of the earth is bathed in its glory, we may by persistent use of this potent aid gradually approach the praiseworthy achievements of the author. The book is delightfully readable and fills one with ardor for such work. It should be carefully perused by every man interested in this type of practice. Slyfield.

Medical State Board Questions and Answers. By R. Max Goepp, M.D., Professor of Clinical Medicine in the Graduate School of Medicine, University of Pennsylvania. Sixth Edition, Thoroughly revised. Octavo volume of 754 pages. Philadelphia and London: W. B. Saunders Company, 1929. Cloth, $6.00 net.

For twenty-one years this publication has been a resource for those preparing for state board examinations. No other volume contains as much material as this from which the aspirant for licensure can obtain hints regarding the state examination which he contemplates attacking. This issue contains material selected from state board questions during the past four years. The system consists of a series of questions with correct answers obtained from standard textbooks. If one contemplates brushing up his knowledge in preparation for examinations of this character, he will here secure more condensed information than is available from any other source.

Principles and Practice of Electrocardiography. By Carl J. Wiggers, M.D. Professor of Physiology in the School of Medicine of Western Reserve University, Cleveland, Ohio. With 61 Illustrations, 226 pp. $7.50. The C. V. Mosby Co., St. Louis, 1929.

Part I of this volume is devoted to a description of the many types of electrocardiographic instruments now in use. This will prove quite advantageous in enabling one to select an instrument suitable to his requirements. Part 2 describes the normal electrocardiogram based on physiologic grounds. This is probably more accurate and informative than data based on clinical findings. The author's views regarding changes in the P wave as not being pathonomic or morphologic alterations in the auricular muscles may be quite correct, but many clinicians will agree that a large and notched P wave, with prolongation of the P-R interval is cases of mistral stenosis is at least most suggestive. Part 3, devoted to the principles of record analysis, presents the subject of interpretation of abnormal electrocardiograms in a most reasonable and enlightening manner. It will be much appreciated by all students of the subject. von Phul.

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ORIGINAL CONTRIBUTIONS

GROSS HEMORRHAGE INTO THE UPPER GASTROINTESTINAL TRACT *

H. L. Bockus, M.D.

PHILADELPHIA, PA.

The presence of black looking masses of blood in the vomitus has attracted the attention of the physician since the day of Hippocrates, whose school called it black bile and supposed it to be a secretion from the spleen, because similar matter was seen in that organ. It will always be a source of interest to the physician and of alarm to the patient because it is the life fluid of the body. The term, gross hemorrhage, is used to mean blood visible to the naked eye, either as hematemesis or melena or both, sufficient to cause symptoms of internal hemorrhage such as rapid weak pulse, dyspnea, thirst, restlessness, fear, weakness, pallor or even shock.

A series of twenty-seven cases seen at the Graduate and Presbyterian Hospitals form the nucleus for the paper. The etiology is quite diversified. The classification of Balfour into intragastric and extragastric causes has been adopted because of its simplicity. Including peptic ulcer, regardless of its situation (duodenal or gastric) in the intragastric group, twenty cases or 74 per cent were so classified. Of the latter, seventeen were due to peptic ulcer. Six were gastric and eleven duodenal ulcers. Four of the former were in females; all of the duodenal ulcers occurred in the male sex. Hematemesis was present in only three of the duodenal ulcer cases. It occurred in 100 per cent of the gastric ulcers with hemorrhage. The remaining three cases in the intragastric group include one case of cancer of the stomach, one of ruptured sclerotic vessel and one case of gastric crisis without evidence of ulcer.

Seven cases or 26 per cent were classified as extragastric. There were two cases with pathology in the duodenum, not due to ulcer. One was a case of primary duodenal adenocarcinoma and the other a possible case of duodenitis. There were two cases of bleeding esophageal varix due to atrophic cirrhosis of the liver. One occurred in a white male who had never tasted alcohol, the other was a young colored man. Both were proven at autopsy. Two cases were associated with splenic tumor, one a case of Barti's disease (second stage) and the other of splenomegaly in a luetic Jewish female with chronic obstructive jaundice due to postoperative adhesions. One case of true purpura or thrombocytopenia (Werlhof's disease), with hematemesis as the first symptom, was encountered. A systematic discussion of the various causes of gross hemorrhage will be undertaken.

Intragastric Causes

1. PEPTIC ULCER

The majority of all cases of bleeding from the stomach and duodenum are due to ulcer in the

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* From the Gastrointestinal Clinic, Graduate Hospital of the University of Pennsylvania and the Presbyterian Hospitals, Philadelphia.

* Read before the Fortieth Annual Meeting of Washington State Medical Association, Yakima, Wash., Aug. 29-31, 1929.

stomach or duodenum. They will be considered together. Statistics of the frequency of hemorrhage in ulcer have been gradually reduced from 30 to 84 per cent down to between 15 and 20 per cent, with our increased ability to diagnose ulcer in the absence of hemorrhage. The present statistics are dependent upon an analysis of hospital cases. The percentage is much less, considering the total number of ulcers. In our experience gross hemorrhage occurs in about 5 per cent of all cases of ulcer.

Hemorrhage from duodenal ulcer is a more common experience because of the greater number of duodenal ulcers, but gastric ulcers are more apt to give rise to gross bleeding. The greatest number of cases occur between thirty and forty years of age (Crohn). The average age of our cases (17) was forty-one years. Hemorrhage is twice as frequent in ulcer occurring in the female sex as in the male (Crohn). A blow, fall or violent exercise has been given varying importance as an exciting cause, but trauma is probably of little etiologic consequence.

Pathology. Hemorrhage from a gastric ulcer usually occurs as a result of erosion into a coronary vessel on the lesser curvature. The lesser curvature vessels are close to the curvature, but the vessels along the greater curvature are located 1 cm. away from it. Gastric ulcer is exceedingly rare near the greater curvature. Duodenal ulcers usually erode the superior pancreaticoduodenal vessel or its branches which are closely applied to the superior border and posterior surface of the cap. Alternate erosion and thrombosis of the same vessel may occur in chronic ulcer. The size of the hemorrhage cannot be considered a criterion of the magnitude of the vessel. Dieulafoy has noted a fatal hemorrhage in a superficial ulcer; and fatal hemorrhage from a superficial duodenal ulcer in cutaneous burns (Curling's ulcer) is common knowledge. Crohn has noted the striking tendency of an acute ulcer to heal after a hemorrhage.

Symptoms. The fact that gastric ulcer is more apt to give rise to hematemesis, and duodenal ulcer to melena was well borne out in our cases. A mild febrile reaction may develop several days after hemorrhage. Mild leukocytosis is frequent. Although in most cases a history suggesting ulcer of years standing may be obtained from the patient or family, the hematemesis or melena may constitute the first sign of gastric or duodenal disease. In three of eleven cases of duodenal ulcer in our series melena occurred without prodromal symptoms of ulcer. Hemorrhage may be associated with an abrupt cessation of other symptoms. The latter type is often due to an acute ulcer.

Acute ulcer frequently heals so rapidly that laparotomy and search for the ulcer is often unfruitful. This occurs frequently enough to contraindicate routine exploration after the hemorrhage without previous demonstrable evidence of the lesion. Even in long standing ulcer cases the surgeon may be unable to locate a lesion, if the operation has been preceded by a long diligent medical treatment.

Case 1. J. A., a male adult, age 63, was brought to the hospital October 28, 1928, following a siege of hematemesis. A stomach complaint suggesting ulcer had been present fifteen years. A roentgen diagnosis of ulcer had been made eighteen months previously in Baltimore. One month previous to admission he had a spell of abdominal pain, followed by hematemesis and melena. Two days previously he started to pass large tarry stools, became quite weak and developed a boring abdominal pain.

He was placed on the conservative hemorrhage regimen but the pain persisted for three weeks. The gross bleeding stopped but he continued to bleed slightly; the anemia became progressively worse. Red blood-cells 1,500,000, hemoglobin 25 per cent. After transfusions were given and alkaline powders started, the pain and bleeding ceased. Roentgenogram revealed a definite ulcer niche one-half inch prepyloric on the lesser curvature and marked deformity of the greater curvature of the stomach, suggesting hypertrophied rugae, prolapse or cancer.

Treatment was continued and one month later both defects persisted but were improved. He remained symptom-free. A third series three weeks later still revealed the niche. Operation was performed by Dr. Carnett in January, 1929. Careful search revealed no indication of ulcer, although the stomach was opened and the duodenal mucosa inspected.

The operation was advised in this case because of the long history of digestive symptoms, the previous history of bleeding and the persistence of a niche after ten weeks of strict medical treatment. His age and the suggestion of a recurrence of bleeding by gastric analysis confirmed our opinion of the necessity for surgery. Patient has had two subsequent admissions to the hospital, each time with symptoms typical of duodenal ulcer, but without bleeding. Roentgenogram revealed duodenal deformity and marked irregularity of antrum, suggesting hypertrophied rugae. He has been promptly relieved by Sippy ulcer regimen and jejunal feedings.

The presence of a long history of postprandial difficulties is the strongest proof of ulcer. In the absence of a history or constitutional signs of other disease in a comparatively young, previously healthy adult, acute ulcer should be suspected.

Case 2. A young man of 23 years of age was admitted to the hospital in October, 1928, who had experienced slight pain in the upper right abdominal quadrant of one hour's duration five days previously. No previous symptoms. Three days later he passed several large tarry stools which continued up to day of admission. The hemorrhage stopped soon after admission and he convalesced satisfactorily. Three weeks later diagnostic studies revealed a slight hyperacidity with slight gastric motor delay and a small niche on the lesser curvature of the cap. This was undoubtedly a case of acute duodenal ulcer.

An increasing number of reports are accumulating in the literature of patients who have been explored after gross hemorrhage for symptoms identical with those of duodenal ulcer, in which a circumscribed duodenitis was found rather than ulcer (Judd). Stippling and subcutaneous hemorrhages in the duodenum and pylorus have been produced by injecting organisms removed from tooth abscesses in individuals having gastrointestinal hemorrhage without ulcer (Riviers). A circumscribed inflammation of the duodenum or stomach (particularly near the pylorus) seems to be an occasional cause for gross hemorrhage. Foci for infection in the mouth or elsewhere seem clinically important as an etiologic factor in these cases just as in bleeding ulcers. Erosions of the stomach, described by Einhorn and considered a precursor of ulcer by Aschoff, may be considered a rare cause of gross hemorrhage.

2. CANCER OF STOMACH

Cancer is an infrequent cause of gross hemorrhage as compared with ulcer. Only 8 per cent of the Mayo Clinic stomach cancers were associated with gross hemorrhage. When this symptom does occur in cancer, the diagnosis has usually been made previous to the onset of the bleeding. A preceding history of progressive stomach symptoms, associated with weight loss extending over a period of only a few months in an individual of cancer age, should excite a strong suspicion of malignancy. A palpable mass in the epigastrium obviously necessitates its exclusion. If cancer cannot be reasonably excluded, exploration should be undertaken as soon as it is safe.

3. GASTRIC LUES

Gastric syphilis which in most instances causes a diffuse fibrosis is frequently associated with bleeding but like cancer rarely gives rise to gross hemorrhage. Five per cent of the Mayo cases had gross hemorrhage. One of our cases, in which the melena was attributed to duodenal ulcer, also had a prepyloric luetic lesion of the gummatous type which fulfilled all of the clinical criteria for a diagnosis of gastric syphilis. We assumed the hemorrhage was due to the duodenal ulcer but the luetic lesion may have been the cause. A positive Wassermann should cause one to consider gastric lues and luetic hepatitis as possible etiologic factors, although the syphilis will usually prove to be but incidental. Nevertheless antiluetic therapy should be cautiously included in the second or third stage of the management of such cases, regardless of the nature of the pathology.

4. BENIGN TUMOR

Benign tumor of the stomach is extremely rare (only 0.6 per cent of all gastric tumors are benign, according to Crohn). Clinically they may be symptomless or they may mimic bleeding ulcers, or malignancy or cause intermittent obstruction (if prolapsed through the pylorus). Gross hemorrhage is an occasional symptom. Diffuse polyposis or chronic gastritis with hypertrophied rugae rarely cause gross hemorrhage.

5. ARTERIOSCLEROSIS

Very rarely in late life in an individual with arteriosclerosis and hypertension a gross hemorrhage from the stomach may occur without a previous history of stomach trouble and in the absence of a demonstrable lesion. It occurs in the same type of individual who might be expected to develop apoplexy. It may be assumed to be dependent upon thrombosis or rupture of a terminal nutrient vessel with autodigestion and frank hemorrhage.

I recall seeing a man in the early sixties, several years ago who developed hematemesis when apparently in good health. He had had vague indigestion which he considered of no consequence for several months. All studies were negative except for a very small prepyloric defect. The radiographer thought early malignancy likely. A medical opinion concerning the advisability of operation was unnecessary as the patient flatly refused to consider it. A satisfactory convalescence ensued and the blood pressure which was 100 systolic when first seen gradually climbed to well over 200, at which time the patient had completely recovered. He remained perfectly well until one year later when he died of apoplexy.

6. GASTRIC CRISIS

In some cases of gastric crisis attacks of vomiting and retching may occur frequently and persist for many days. Gross hemorrhage has been reported during a gastric crisis. The coexistence of ulcer and tabes should be strongly suspected in such cases. In one of my cases hematemesis occurred during a spell of gastric crisis. A very careful examination failed to reveal the presence of ulcer and a history suggesting ulcer was present.

7. POSTOPERATIVE HEMORRHAGE

Gross bleeding from the stomach as a result of gastric surgery has greatly diminished in frequency. It should occur but rarely as it is due in most instances to a fault in technic. Reoperation is inadvisable according to Balfour as a bleeding point can rarely be found. Gastric lavage using very hot (120° F.) or ice water seeems of distinct value. The tube should be introduced through the cardia, not further. I have seen two cases of copious hematemesis immediately after gastroenterostomy recover, following ice water lavage.

Extragastric Causes

1. CIRRHOSIS OF LIVER

Excluding duodenal ulcer, this constitutes one of the most common causes of bleeding from the upper tract of extragastric origin. In our experience varix is as common a cause of gross hemorrhage in the negro as ulcer. It is usually dependent upon a manifest portal cirrhosis but may occur in splenic anemia before the cirrhosis is advanced. The classical picture of portal cirrhosis will be expected in bleeding from a varix. A history of alcoholism is frequent and of syphilis not uncommon. Vague digestive disturbances are the rule. The hepatic facies, distension of the abdominal and hemorrhoidal veins, ascites and either marked diminution in hepatic dullness or more often a large rather hard liver may be expected.

Bleeding from an esophageal varix may occur in the absence of signs of disease of the liver. Rolleston described this type as latent cirrhosis. This may be explained by the compensatory dilatation and stasis in the esophageal veins in portal cirrhosis. The anastomosis between the esophageal veins of the general circulation and the gastric contributaries of the portal vein is quite intimate.

Hematemesis occurs in about one-fourth of all patients dying with a cirrhotic liver. It is usually an early symptom in cirrhosis, but may occur in the last stages. Although it is considered to be rarely fatal (7 per cent in Rolleston's series), both of the cases included in this report died. Severe hemorrhage from esophageal varices is more common in association with the large than with the small cirrhotic liver. The blood is usually poured out slowly into the stomach, having ample time to clot and to be acted upon by gastric juice, hence the vomitus is usually darker than in gastric ulcer (Rolleston and McNee).

Alarming symptoms and collapse are more rare in hemorrhage from varix than from ulcer. It is usually a single hemorrhage in varix. Occasionally the blood may well up into the mouth when the patient is recumbent rather than be vomited. It should be recalled that hematemesis may result from portal obstruction due to causes other than cirrhosis of the liver, as for example portal thrombosis or phlebitis.

Case 3. **T. L.**, a colored male 32 years of age, was admitted on August 4, 1928, after vomiting a quart of blood. There had been a history of postprandial discomfort for two years. No history of luetic infection or of the abuse of alcohol could be obtained.

He excited our interest because of a rather stuporous condition rather than the usual restlessness seen in gross hemorrhage. He was not in shock and had received no morphine. Blood chemistry was taken on this account and revealed nitrogen retention; urea 94 mg. per 100 c.c.; creatinin 2.0 mg.; sugar 144 mg.; uric acid 3.8 mg. Uremia was considered, although he did not suggest it clinically. There was no evidence of cirrhosis. Ascites and venous distention were absent. The liver was not palpable and seemed normal in size. The blood count fell to 2,500,000 erythrocytes, and 40 per cent hemoglobin. The pulse rate rose to 160. He gradually became more comatose and died on the fourth day.

Autopsy revealed a slightly enlarged but typical advanced hob-nail liver of the Laennec type. There was a very small quantity of fluid in the abdomen. Marked congestion of the mucosa of the lower esophagus and enormous varicosity of the veins with superficial erosions were noted. The kidneys were normal. The part played by the cirrhosis and the absorption of blood from the intestinal tract in producing the high blood nitrogen is speculative. Dehydration probably played a part.

Varicose esophageal veins constitute the cause of hematemesis in cirrhosis in eighty per cent of cases. The other causes given by Rolleston and McNee are:

1. Gastritis. Produced by the cirrhosis usually but may be caused by alcohol or septic foci. The hemorrhage is thought to be due to oozing from minute vessels.

2. Erosions. Cirrhosis probably predisposes to the formation of gastric erosion, dependent upon stasis in the gastric veins or upon toxemia.

3. Peptic ulcer. Rarely occurs in patients with cirrhosis.

4. Varicose gastric veins. Rare cause of hemorrhage.

5. Hemorrhage from pharynx. Small angiomas in pharynx may bleed and run down into stomach and subsequently the blood may be vomited.

Two examinations may be of assistance when cirrhosis is suspected. The urine almost invariably shows a marked increase in urobilinogen of from 100 to 1000 per cent in portal cirrhosis. Cirrhosis is often accompanied by a reduction in the fibrinogen content of the blood. Many consider the liver the site of manufacture of fibrinogen. The tendency to bleeding in cirrhosis has been attributed to this reduction. The normal fibrinogen content of the blood unfortunately is subject to wide variation, from 300 to 600 mg. per 100 c.c. The test has not been clinically utilized sufficiently to evaluate it. After the emergency has passed one of the dye tests (bromosulphalein) for liver function should be performed, as dye retention is the rule in cirrhosis and will be absent in practically all other conditions giving rise to hemorrhage except jaundice.

2. PORTAL THROMBOSIS

Gastrointestinal hemorrhage has been reported in 44 per cent of cases of portal thrombosis (Rolleston). It was the initial symptom in seven of twenty cases of acute portal thrombosis reported by Langdon Brown. It may be dependent upon thrombosis from necrosis of the mucosa or upon venous oozing. In mesenteric thrombosis hemorrhagic effusion into the lumen of the bowel when diarrhea is to be expected. The sudden onset of ascites, hematemesis and splenic enlargement is very suggestive of portal thrombosis. As Rolleston has pointed out, portal thrombosis is so rare and portal cirrhosis so common, that even in the event of an acute onset portal cirrhosis is the more likely.

3. ESOPHAGEAL LESIONS OTHER THAN VARIX

Ulcer of the lower esophagus is quite rare, but occurs more frequently than supposed previous to the recent report of Jackson. He has diagnosed 88 cases in 4000 of esophageal disease. Hematemesis and melena were noted in a number of cases. The condition can only be diagnosed with certainty by esophagoscopy. A niche similar to that seen in gastric ulcer has not been demonstrated (Jackson). Cancer of the esophagus, much more frequent than ulcer, rarely gives rise to a large single hemorrhage. Ulcerative lesions of the esophagus due to syphilis, tuberculosis and actinomycosis are so rare as to deserve mention only. Simple esophagitis and erosions might conceivably cause bleeding but gross hemorrhage from this source is of no clinical consequence. Bleeding from an esophageal varix is the outstanding prevalent cause of gross hemorrhage from the esophagus. All other causes are rare. When hematemesis or melena cannot be accounted for by gastroduodenal study, endoscopic examination of the esophagus should be done.

4. SPLENIC DISEASES

a. *Splenic anemia.* Osler was the first to point out the frequent occurrence of gastric hemorrhage in splenic anemia. It is the most common disease of the spleen and is more frequently associated with gastric hemorrhage than any other type of splenomegaly. The hemorrhage may be immediately fatal, but recurrent hemorrhages may occur over a period of ten or fifteen years. The hemorrhage is dependent upon the intimate blood supply between the stomach and spleen or upon the accompanying hepatic cirrhosis or both. Forty per cent of the blood of the splenic artery goes to the stomach with a corresponding return through the vasa brevia. Thrombophlebitis of the splenic vein is common and induces intense engorgement of the mucosa of the cardia. Balfour doubts if the bleeding is mechanical in origin because hemorrhage is rare in myelogenous leukemia and in hemolytic icterus, both of which are associated with much larger splenic tumors. He feels that the hemorrhage is dependent largely upon the hepatic factor.

We are considering splenic anemia as an early stage of Banti's disease after Mayo, Warthrin and Dock. The common triad of symptoms in Chaney's series of 69 cases are (1) mass in left abdomen, (2) gastric hemorrhage and (3) weakness. Leukopenia is the rule in splenic anemia. Fifty-five per cent of his cases had gross gastric hemorrhage. Gross bleeding is more frequent in the cases which have progressed to the stage of hepatic cirrhosis. The duration of symptoms in his cases was seven years and the average age thirty-three years. The spleen was palpable in every case but one.

Splenectomy seems advisable in cases of splenic anemia with gross hemorrhages, after appropriate preparation with transfusions. Chaney makes a plea for earlier splenectomy before the stage of hepatic cirrhosis. The mortality after splenectomy in his cases was increased from 12.8 per cent in the noncirrhotic group to 23.3 per cent in the advanced cirrhotic group.

Rosenthal divides the cases into a thrombocytopenic group and a thrombocythemic group. The cases with diminution of blood platelets do well after splenectomy. Operation is inadvisable in the second group because of danger of thrombosis and repeated hemorrhages, according to this observer.

Case 4. B. G., a white, single female 62 years of age, came under observation in the spring of 1926, following a bout of hematemesis. She had been operated upon in London one year previously immediately after an attack of gastric hemorrhage. The surgeon told her he did not find an ulcer which he expected, but something was wrong with the liver and spleen. She had had several attacks of bleeding from the stomach between this operation and the time of admission.

The lower edge of the spleen was palpated below the brim of the pelvis and was quite hard. The liver edge seemed firmer than normal and was felt two and a half inches below the costal margin. No ascites. A secondary anemia, leukopenia and thrombocytopenia were present. The platelets averaged from 60,000 to 200,000. There were no subjective or objective purpuric manifestations. A diagnosis of Banti's disease was made. Splenectomy was performed by Dr. Carnett and recovery was uneventful.

She has been free from gastrointestinal hemorrhage, but has had a persistent secondary anemia, dependent upon a tendency toward epistaxis and bleeding hemorrhoids. She was admitted to the hospital five times between the fall of 1926 and winter of 1928 with attacks of febrile jaundice of short duration usually following respiratory infections. The last admission was January 16 with bronchopneumonia. She had been nursing three influenza cases. On admission the outstanding features were jaundice, fever, fibrinous pleurisy on the right side and bronchopneumonia. Death occurred January 18.

Autospy revealed a slightly enlarged, moderately cirrhotic liver with slightly raised hob nails. The lower esophagus and cardiac end of the stomach were markedly congested and esophageal varices were prominent but not eroded.

The case is of interest because of the absence of severe hemorrhages for two and a half years following operation. She seemed more than usually susceptible to respiratory infection after splenectomy. The first operation was performed on the mistaken diagnosis of ulcer, although the spleen must have been enlarged.

b. *Myelogenous leukemia,* although associated with an enormous splenomegally, is rarely the cause of gastric hemorrhage. Only 1 per cent of the Mayo cases had hematemesis.

c. *Hematemesis* was absent in forty-five cases of hemolytic icterus at the Mayo Clinic.

d. Any type of splenomegaly (luetic, tuberculous, malarial and idiopathic) may rarely be associated with gross hemorrhage from the upper gastrointestinal tract.

5. BLOOD DRYSCASIAS

a. *Polycythemia vera* or erythremia, a condition characterized by a persistent increase in the number of circulating erythrocytes, may be a cause of gastric hemorrhage. Brown and Giffin report two instances of gastric bleeding in fourteen cases. The clinical features are striking. A reddish color of the skin and mucous membranes, bleeding gums and vertigo are the earliest signs. The spleen is usually enlarged. There is a tendency toward endarteritis and thrombosis. Weight loss, bulimia and polydipsia are frequent metabolic disturbances. The leukocytes and hemoglobin percentage are increased as is the total blood volume. Radiation of the long bones, venesection and plenylhydrazine hydrochloride (0.1 t.i.d.) are the usual therapeutic procedures.

b. *True purpura hemorrhagica,* thrombocytopenia or Werlhof's disease, is often associated with gastrointestinal hemorrhage (7 of Griffin's 28 cases). This is a hemorrhagic malady, not necessarily a purpuric one. The tendency toward bleeding is dependent upon a marked reduction in blood platelets. Hemorrhage usually does not occur until the number of platelets is below 30,000. Prolonged bleeding time after pricking the lobe of the ear is a striking feature of the malady. There is extreme delay in clot retraction. Venous congestion of the arm after the application of a tourniquet is followed by subcutaneous hemorrhages in this disease. The ease with which bruises are induced is characteristic. A gastrointestinal hemorrhage may constitute the first sign in an individual without purpuric spots, as it did in a recent case seen in consultation with Dr. Shay, at the Graduate Hospital. Splenectomy is of permanent value in some cases. Blood transfusions and foreign protein are of temporary value.

c. *Henoch's purpura* is characterized by vomiting, colic and bleeding from the bowel. The hemorrhagic tendency is preceded by an urticarial rash and can be induced by an injection of foreign protein. The hemorrhage is probably due to an affection of the capillaries. The treatment is that customary in urticaria.

d. *Hemophilia,* a rare hereditary malady may be responsible for gastrointestinal bleeding, particularly after trauma. Most hemophiliacs are young as the mortality is high. It is practically confined to the male. It is characterized by a prolonged coagulation time of the blood, but no abnormality in bleeding or clot reaction time.

6. JAUNDICE

Any type of jaundice may occasionally be associated with gross hemorrhage. It is extremely rare in hemolytic icterus and in hypertrophic biliary cirrhosis, but seems equally apt to occur in obstructive or intrahepatic icterus. The tendency to bleed may be greater in long standing cases, but may be present soon after the onset. The coagulation time of the blood may be prolonged or normal. The calcium content of the blood is often undisturbed, but the tendency to bleed is in some way associated with a diminution of available calcium. It seems likely that calcium unites with bilirubin in the blood.

The most frequent type of hemorrhage encountered in jaundice is that following operation. The danger of this complication following operation on a patient with icterus was considerable until quite recently. This risk has been greatly reduced by the use of the preoperative plan of Walters, that is, administering calcium intravenously for several days preceding the contemplated operation. Parathormone may increase the availability of the calcium.

That the presence of jaundice does not exclude the necessity for a thorough search for other causes of bleeding is illustrated by the following case.

Case 5. A. F., a Jewish male, 36 years old, was admitted to the Graduate Hospital with chronic obstructive icterus and gastrointestinal bleeding. He had been operated upon in another hospital assumably for obstructive icterus two years previously. A cholecystgastrostomy had been performed. The operation was followed by periodic attacks of jaundice and abdominal pain with vomiting. The pain suggested somewhat the possibility of duodenal ulcer but was not typical.

Studies revealed evidence of a low grade obstructive icterus without indication of calculi. The gastric acidity was normal. The jaundice subsided on a duodenal bile drainage regimen. However, the patient became progressively weaker. There was a persistent grade four occult blood reaction in the stools in spite of a strict duodenal ulcer regimen for three weeks. The erythrocytes dropped to 2,770,000. Hemoglobin 42 per cent. Fragility, coagulation, clot retraction and bleeding time and platelets were normal.

Exploration by Dr. Carnett revealed an annular, ulcerating polypoid growth in the second portion of the duodenum. The tissue examined by Dr. Case was reported adenocarcinoma. This was the cause of the bleeding. The icterus had nothing to do with it, as bleeding continued long after the icterus had cleared up.

7. DISEASE OF GALLBLADDER, APPENDIX OR PANCREAS

Gastric hemorrhage has been attributed in rare instances to disease of the gallbladder by Naunym, Flainer and others. Crispen found hematemesis in 5 per cent of his cases of cholecystitis. Balfour believes it is more apt to occur, if there is an associated pancreatitis. Four per cent of Eustermann's cases of gallbladder disease, which were associated with well marked reflex gastric symptoms, had hematemesis. It seems likely that the gallbladder may rarely act as a toxic focus, inducing gross bleeding from the stomach. In most cases of hematemesis in patients with gallbladder disease without jaundice, the hemorrhage will be found to be due to a lesion in the upper gastrointestinal tube.

A diseased appendix has likewise been looked upon as a toxic focus causing gastric erosions and bleeding. Crispin claims an incidence of 2 per cent of hematemesis in his cases of chronic appendicitis. The experience of most clinicians does not support the contention of appendiceal origin of gross hemorrhage from the upper tract. Removing the appendix in obscure gastric bleeding does not affect a cure.

8. LESIONS OF SMALL BOWEL

Tumors of the small intestine are rare causes of gross hemorrhage which manifests itself as melena. Benign and malignant tumors of the upper small intestine occur very infrequently. It is the rarest situation for carcinoma in the gastrointestinal tract. A definite diagnosis is rarely possible except at operation or autopsy.

9. CARDIAC AND PULMONARY DISEASE

Marked congestion of the stomach may occur in advanced cardiac and pulmonary lesions and give rise to gross bleeding from the stomach. The only difficulty in diagnosis in this group is the possibility of a lesion in the stomach itself in addition to the advanced cardiac or pulmonary condition.

10. TOXIC CONDITIONS

Bacteremia, particularly streptococcal, is occasionally associated with gross hemorrhage from the gastrointestinal tract. Uremia and toxic nephrosis are likewise rare causes of bleeding. General infections, such as the severe exanthemata, variola, malaria and yellow fever, may be very rare causes.

Pernicious anemia, sprue and scorbutus should be mentioned as rare causes of gross hemorrhage.

11. SWALLOWED BLOOD

Swallowed blood as a result of hemorrhage from the throat and air passages should always be borne in mind and a thorough objective examination made if suspected.

Management of Cases of Hemorrhage from the Upper Gastrointestinal Tract

The plan which is outlined incorporates the principles followed on the gastrointestinal service at the Graduate Hospital. A number of years ago Rodman advised against surgery during the course of active hemorrhage except in rare instances of failure to control bleeding by more conservative means. The reasons given by Rodman illustrate the wisdom of his advice. (1) The emergency does not permit of a definite diagnosis. Surgery performed in an emergency is of little avail except in some cases of ulcer. Even when the hemorrhage is coming from an ulcer, the bleeding point may not be found. (2) The patient who has just had a severe hemorrhage is not in condition to stand an operation. The mortality is very high. (3) Recovery is the rule without operation. Eggleston has seen but one fatality in twenty years from a conservatively managed ulcer hemorrhage. The mortality from hemorrhage in six hundred cases of ulcer was 2.5 per cent (Hurst). Crohn gives a hemorrhage mortality of 0.9 per cent in the whole ulcer group.

PRINCIPLES OF MANAGEMENT

Ulcer is the most frequent cause. The following principles must ever be in mind:

1. The patient will almost invariably recover from the first hemorrhage, if due to ulcer.

2. Rest of the mind, stomach and body are essential.

3. Avoid meddlesome measures. More harm results from doing too much than too little. Nature will do the job, if she has a chance.

4. All measures which increase blood volume or blood pressure must be strictly avoided except in the treatment of shock.

4. Keep the stomach inactive until a clot has had a chance to form.

EXAMINATIONS INDICATED IMMEDIATELY

1. Elicit a history from a member of family while such a person is available. The following points should be covered:

a. Has there been a previous hemorrhage from the stomach or melena? If a long time before, cancer is unlikely.

b. History of bleeding from elsewhere? Think of blood dyscrasia or splenic anemia.

c. If patient is a male child, have there been bleeders in the family suggesting hemophilia?

d. History of indigestion preceding hemorrhage? If short progressive complaint associated with loss of weight and strength, think of cancer. If the history is long with definite postprandial relationship and periodicity, think of ulcer. Remember, however, that hemorrhage without a preceding history of indigestion is most often due to ulcer.

e. A history of alcoholism or lues suggests possibility of cirrhosis or hepatitis.

f. A preceding history of dysphagia? Suspect the esophagus. Esophagoscopy is indicated when patient's condition permits.

g. What was the blood pressure previous to hemorrhage? If high, a ruptured sclerotic vessel should be borne in mind.

h. Does the patient have nephritis? A possible toxic cause.

2. Avoid roughness in making abdominal examination. It may dislodge the clot or stir up peristalsis. The following points may be determined without harm to the patient:

a. Splenomegaly must be ruled out.

b. Evidence of cirrhosis of liver. Increase or decrease in size of liver, ascites, distended veins and hemorrhoids are the particular things to eliminate.

c. Sclerosis of peripheral vessels?

d. Presence of a mass?

e. Enlargement of superficial lymph nodes suggesting possible leukemia or syphilis or metastatic malignancy?

f. Evidence of purpura? If suggestive, apply tourniquet to arm and examine for petechial hemorrhages.

g. Heart and lungs should be carefully examined to rule out gross lesion of either viscus. Evidence of cardiac decompensation may suggest congestion as possible factor.

h. If seen at night, rule out jaundice.

3. Laboratory studies:

a. Complete blood count. The differential smear may reveal evidence of a blood dyscrasia. A platelet count, bleeding and clot retraction time are necessary to rule out purpuric states. Marked delay in coagulation time sugggests hemophilia.

b. Blood chemistry is essential, when uremia or other toxic conditions are under consideration. A state of semicoma or stupor particularly makes this examination essential. A rather high nonprotein nitrogen with disturbance of the acid-base balance toward the acid side has been encountered in several cases following the hemorrhage. In three cases, personally observed, there was no evidence of nephritis. Dehydration, low urinary output and absorption of large quantities of blood may possibly explain the finding.

c. Bleeding in a patient with icterus warrants a blood fragility test to rule out hemolytic icterus.

d. Blood typing and selection of a donor on admission. Transfusion should be avoided until after the first week if possible. A reaction or increase in blood volume may dislodge a clot. It is necessary in very few cases. Its greatest value is in cases with small repeated hemorrhages or with recurrence of bleeding after four or five days and in preparation for surgery, in those rare cases in which operation must be performed in an emergency. If the blood loss has been marked, a transfusion after the tenth day will speed up convalescence. It may be carried out at that time without danger to the patient. If the systolic blood pressure drops to 70 (Bernheim's rule), transfusion had better be given.

e. Erythrocyte count and hemoglobin estimation should be performed daily until the patient is out of danger. The first drop after the hemorrhage is not an index of the extent of the hemorrhage. The quality of blood may be little changed. It is a quantitative loss at the start. The low point is often not reached until the third or fourth day after cessation of bleeding. This is due to dilution of the blood by fluid from the tissues to bring up the blood volume. The count will then remain stationary for a time and then gradually rise. The rise is indicative of blood production from stimulation of the marrow. A decreasing red count and lessening of hemoglobin cannot be taken to mean a continuation of bleeding during the first four days after a hemorrhage. A definite drop after the fourth day is a bad omen and usually indicates a recurrence of the bleeding.

f. Temperature, pulse and blood pressure should be taken every two hours, until signs indicate a cessation of bleeding. The pulse rate steadily mounts, the pulse volume diminishes and the systolic blood pressure falls during active bleeding. When the bleeding stops, the blood pressure slowly rises and the pulse rate gradually falls. They constitute the most valuable signs to follow during the emergency. The blood pressure alone is not always reliable because of the normal variation.

g. Examine all stools and vomitus for blood. The insertion of the finger into the rectum for the collection and inspection of feces is of value in the absence of stools, if a new hemorrhage is suspected.

EMERGENCY MANAGEMENT

1. The first consideration is the treatment of shock when it is present. The size of the hemorrhage cannot be used as a criterion. The treatment of shock causes an elevation of blood pressure and an increase in blood volume, which are distinctly contraindications unless the constitutional signs of shock are present. In the latter event a transfusion of 150 to 200 c.c. of blood is the preferable procedure. However, saline intravenously to which glucose can be added may have to be used at once if a donor is not available. Enteroclysis should be avoided. It is of no value in the treatment of shock and certainly is not needed in its absence. It frequently disturbs the patient and may augment peristalsis. The ordinary mechanical measures, such as elevating the foot of the bed, applying heat to the extremities and bandaging the extremities and the abdomen are of value. Cardiac stimulants are contraindicated. Strychnine which is not a circulatory stimulant is the drug of choice.

Very occasionally bleeding may be dependent upon erosion of a large vessel and the constitutional signs will become progresisvely and rapidly worse. In spite of the high mortality, surgery will have to be resorted to, but only after blood transfusion.

2. The majority of cases with gross hemorrhage are not in shock. On the contrary, they are exceedingly alert and restless. Fear of impending death is the rule. Of primary consideration is assurance by word and manner by the physician. Hematemesis is rarely fatal. The patient should be told so. This will do as much to quiet the circulation as any other measure.

3. Sufficient opiates by injection should be used to control restlessness and vomiting if it is present. It should be continued until the clot has had a chance to form, usually two or three days. Its principal value is the quieting of the circulation and gastrointestinal peristalsis. Willcox warns of the possible danger of morphine in hemorrhage due to portal cirrhosis. He states that even one-quarter of a grain may prove fatal, due to the diminished antitoxic power of the cirrhotic liver. Atropine had better be avoided.

4. We still use the ice cap to the epigastrium. The wisdom of the ice cap in gastric hemorrhage is questioned. Many maintain that the chilling has a depressive effect on the already depleted patient. Whether it has any real value in treatment is difficult to say. We have seen it do not harm; at least it tends to keep the patient quiet in one position.

5. Promiscuous use of coagulants without definite indication should be avoided. They are of little value in the ordinary hemorrhage from ulcer (the common cause). If there is any defect in clotting elements the following may be tried:

a. A small blood transfusion is undoubtedly of most value, but it may not be possible to carry out in an emergency.

b. Heterologous human serum or whole blood may be injected intramuscularly (10–20 c.c.).

c. Fresh rabbit serum has been used by some with apparent success (10 c.c. into the muscle every four hours for several doses).

d. Coagulose, a powdered preparation of horse serum, has been given subcutaneously (10 grains in 8 c.c. of water).

The most popular preparations for oral administration, which must await the cessation of vomiting, are:

e. Cephalin or thromboplastin, the juice from brain tissue, is administered in drachm doses every half hour for three or four doses.

f. Coagulin (powdered platelets) is recommended in a dosage of 20–60 c.c. of a 10 per cent solution per os.

g. Bleeding associated with jaundice indicates the use of calcium intravenously. This may be made more readily utilizable by administration parathormone intramuscularly.

6. Stomach lavage is indicated but rarely. In extensive hemorrhage following operation on the stomach it is of distinct value. The tube should be inserted just beyond the cardia and either hot (120° F.) or ice water should be allowed to run in and out slowly. Ice water lavage of the lower esophagus has met with success in one of our obstinate cases of bleeding varix.

7. Nothing by mouth until forty-eight hours after hemorrhage has stopped. This plan is open to debate. Experiments have been cited to show that the empty stomach is not at rest, due to hunger contractions. Andresen recommends keeping the stomach partially filled with liquids on this account. It has been our practice to fast the patient until the clot has had a chance to form. There is no proof to indicate that the empty anemic stomach is capable of violent hunger contractions. We use food during this period only in those cases in which opium does not control pain when the latter is present. The narcotic will probably take care of any hunger contractions which may be present.

8. Gum chewing and alkalies are advocated by Hunter, the assumption being that saliva hastens clotting. It is claimed that free hydrochloric acid delays blood clotting and that an alkaline medium favors it. The clot in an acid medium is less firm as the acid is supposed to destroy a substance identical with tissue fibrinogen, according to this observer.

MANAGEMENT, SECOND STAGE

This stage covers the period of expectant conservative treatment, starting about forty-eight hours after the hemorrhage up to the time when it is safe to start studies to determine its cause. This occurs at the end of the third week in most cases.

5. The patient is to remain at absolute rest in bed.

2. Water is allowed by mouth on the third day following the hemorrhage. The quantity is restricted to one ounce not oftener than every hour at the start, gradually increasing to three or four ounces.

3. Diet.

Third and fourth days: Albumin water or 5 per cent sweetened gelatin, one and one-half ounces is given every hour. They may be alternated. The following formula of Andresen for gelatin solution may be substituted: Gelatin, one ounce; lactose, three ounces; juice of one orange and water, thirty-two ounces. The same quantities of this solution may be administered every hour. We prefer not to give lactose until the fifth day because of its tendency to distend the intestines.

Fifth and sixth days: Two and one-half ounces of any of the above may be given every hour when awake. Thus albuminous food is adhered to rather strictly until the seventh day after the hemorrhage. It leaves the stomach promptly and has no tendency to form gas and has a high acid combining power.

Seventh to fourtheenth days: The Jarowsky plan of not mixing albumin with fat at the same time in the stomach has been followed in our bleeding ulcer cases for the past two years. I feel the convalescence has been a little more satisfactory since this plan has been followed. A mixture of albumin and cream at alternate feedings greatly delays the departure of both from the stomach according to Jarowsky. Babkin's experiments seem to confirm the contention of Jarowsky. Three ounces of albumin water or gelatin mixture is given hourly in the morning from 7:00 to 11:00 a.m. Three ounces of one-third cream and two-thirds milk hourly in the afternoon from 12:00 noon to 7:00 p.m.

Fifteenth to twentieth days: In order to increase the caloric value of the diet three and one-half or four ounces of equal parts of milk and cream are given hourly from 7:00 to 7:00 p.m. This completes the second stage dietetic management. The establishment of a definite diagnosis will determine the details of subsequent treatment.

4. An alkaline powder may be started on the second day, if ulcer seems the most likely cause of the hemorrhage. Alkalosis naturally contraindicates its use. It is given between feedings, hourly.

5. Purgatives are to be strictly avoided throughout this stage. Constipation will be marked as a result of fasting, rest, morphine, etc., but it is of minor importance when compared with the danger of bleeding from active peristalsis. Mineral oil is started on the third day and oil enemas used after the sixth day if necessary. Lactose may be added to the milk feedings to encourage bowel movements after the seventh day.

MANAGEMENT, THIRD STAGE

1. Diagnostic studies may be instituted at the end of the third week, in most cases. It is not ad-

visable to start tube and roentgen studies previously because of the danger of dislodging the clot. If cancer or other lesion, which if present would modify the plan of management, is suspected, diagnostic studies should be started at the earliest moment commensurate with safety.

2. If no cause for hemorrhage can be found in the stomach or duodenum and constitutional causes can be reasonably dismissed, esophagoscopy is indicated.

3. The inability to discover a cause systemically or a demonstrable lesion by roentgen-ray or endoscopy suggests an acute peptic ulcer as the most likely etiologic factor. Erosions, circumscribed gastritis or duodenitis may likewise be suspected. Further treatment will depend upon the cause and the extent of the pathology.

4. If the cause is ulcer, medical treatment should be continued until the blood count is normal. The necessity for surgery must be judged on the merits of the case regardless of the hemorrhage. If the patient has had two or more previous bouts of bleeding, surgery will as a rule be advisable. This type of ulcer is often not amenable to medical treatment or has been given a thorough trial at medical management previously. Recurrence of bleeding is so frequent after gastroenterostomy alone that it is no longer the operation of choice. Balfour has had 13 per cent, Eggleston 11 per cent and Eusterman 25 per cent of recurrences of hemorrhage after gastroenterostomy. Removal of the ulcer is rarely followed by subsequent hemorrhages, consequently is the operations of choice.

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SURGICAL LESIONS OF THE DUODENUM*

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For many years the profession has noticed that certain diseases pass through cycle phases and are characterized by periodicity. Malarial fever will cause a chill to occur every second, third or fourth day, depending on the type of infection. Pernicious anemia advances in waves of better or worse spells. Patients suffering from exophthalmic goiter are conscious of periodic improvement and spells simulating crises.

Peptic ulcer has always been placed in the group of recurrent diseases and when typical it is more definitely periodic than any other ailment. Such seasonal recurrence applies especially to duodenal ulcers. Just as the sportsman confines his hunting to the open and closed duck season, so also does the ulcer sufferer confine his complaint to certain times in the year. Gastric ulcer is not so definitely seasonal nor so characteristic in its manifestations for it can mimic almost any disease.

When the ulcer is near the pylorus, the symptoms of both gastric and duodenal ulcer are similar. There is no essential difference in peptic ulcer on either side of the pylorus except the cancer potentiality of gastric ulcer. The pylorus is a sort of "dead line," across which malignant disease rarely passes.

Malignant degeneration of a duodenal ulcer is of such rare occurrence that it is not to be taken into account when dealing with the primary disease. On the other hand, it is safe to consider all demonstrable gastric ulcers as potentially malignant and they should be treated accordingly.

DUODENAL ULCER

Diagnosis. It is quite possible for extragastric lesions (such as appendicitis and cholecystitis) and functional states to create symptoms so similar to those of ulcer as to deceive even the most careful and painstaking clinician.

Only a few days ago a young man of twenty-eight was brought to our clinic on account of violent abdominal pain simulating acute perforation. His previous history was typical for duodenal ulcer and the roentgen examination had been positive for a deformed cap. A noted internist had treated him for one year under the diagnosis of duodenal ulcer.

We operated on him in one hour after admission and were astonished when no ulcer was found. The appendix

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*From the Polyclinic.

*Read before the Thirty-Seventh Annual Meeting of Idaho State Medical Association, Lewiston, Ida., July 5-6, 1929.

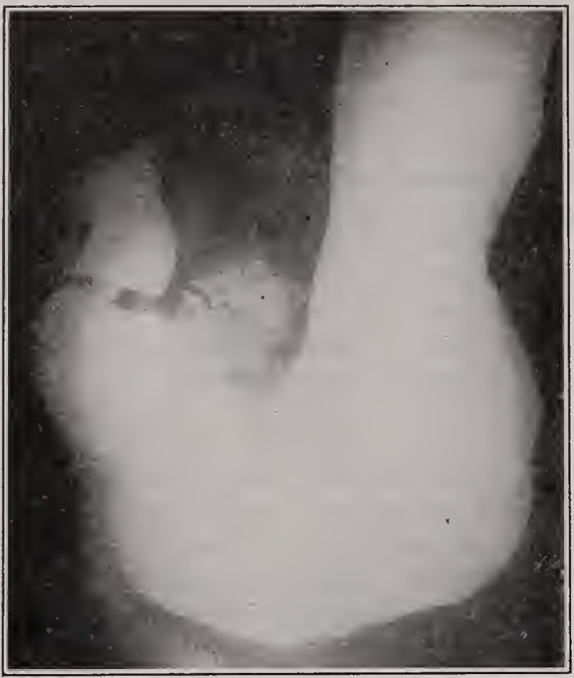

Fig. 1. Normal stomach and duodenum. Note the pylorus and well filled cap beyond. No evidence of deformity is noted on the screen.

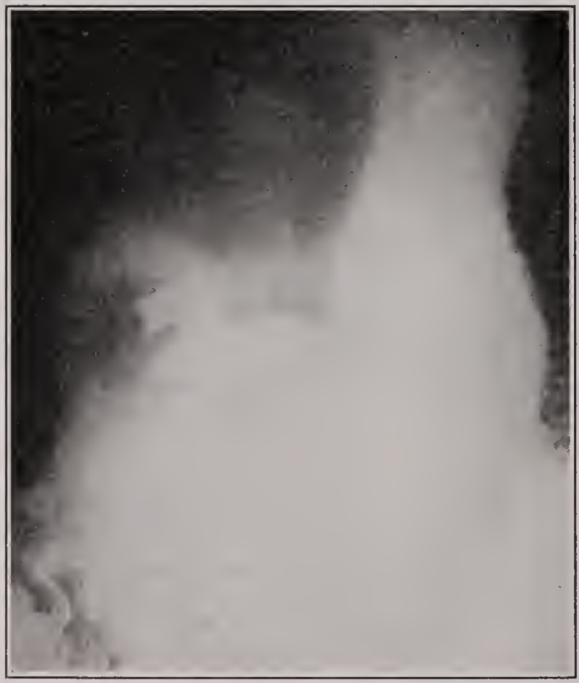

Fig. 2. Duodenal ulcer. Proved at operation. Note the deformed cap. It was persistent on the screen and in all plates. Gastroenterostomy performed. Relief.

was lying along the outer border of the ascending colon and its tip was almost in contact with the gallbladder. It was acutely inflamed, obstructed by a concretion, filled with pus and perforation was imminent. The gallbladder was chronically diseased, densely adherent to the duodenum and sufficient to produce the deformity observed by the roentgenologist. The appendix and gallbladder were removed. He will likely be free from his ulcer symptoms.

Occasionally patients who are suffering from functional states solely will complain of stomach spells similar to those produced by real ulcers. This is especially true of those who have been through several examinations and have learned the symptoms and complain in a misleading manner. An experienced clinician can usually spot such patients and lead them into a sufficient number of pitfalls to disprove the diagnosis. It occasionally happens that the usual ulcer symptoms are lacking and the outstanding complaint is the result of complications.

Males are far more commonly affected than females, probably three or four to one. The majority of ulcers treated surgically are chronic, recurrent and periodic. The spells are seasonal and usually occur in the spring and fall, last from three to six weeks and remit completely. The remission is as characteristic of the ulcer syndrome as the type of the attack. The sufferer can eat most any food with perfect agreement and has no discomfort in the interval. The fact that he is completely relieved between the spells is as diagnostic as the recurrence of the complaint. This is not true of the extragastric lesions simulating ulcer.

Pain is the outstanding complaint and during the time of activity there is a daily repetition of it which bears a definite relation to alimentation and is controlled by food, alkalis, lavage or posture. The character of the pain is of importance, often being hunger-like. Many patients describe it as an "all-gone," empty, gnawing sensation or a desire for food or warmth in the stomach. Often it is noticed as an acid or burning pain, followed by eructation of sour material, "water brash," which puts the teeth on edge and scalds the mouth and tongue. This complaint is greatest when the acid concentration is high.

The pain is usually located in the midepigastrium and may radiate to the back, if a complicating pancreatitis exists. The time of its appearance and the means of controlling the pain are the most diagnostic points in the clinical history. It occurs from two to four hours after meals, the afternoon spell being worse than the morning complaint. Until complications occur the night pain is not noticeable but when it comes on it will often awaken the patient at 2 a.m. Some sufferers learn to take a hard boiled egg or sandwich to bed with them for use when the pain starts.

As a rule, the nearer the ulcer is to the pylorus the later the pain appears; the more remote, the earlier. Patients soon learn that food of any kind will bring relief and they eat something between meals for comfort. Solid food will give relief longer than liquids and a large meal will delay the time of appearance of the pain longer than a small meal. Soda water, magnesia or any alkaline fluid drink will stop the pain immediately. When the distress is typical and true to form in its clinical manifestation, there is no other condition quite so characteristic as duodenal ulcer.

There are a certain number of cases that do not conform to the rule and must be diagnosed by aids other than the clinical history. We have seen quite a number of such cases and the diagnosis of an ulcer was not even suspected until made by the roentgenologist. By and large we believe that the clinician can make a correct diagnosis in eighty-five per cent of all cases without aids. A skilled roentgenologist can spot well over ninety per cent of them without any history, merely by watching the behaviour of the stomach and cap on the screen.

Gastric analysis as a routine has been helpful in a diagnostic as well as prognostic way. The range is from a complete absence of free hydrochloric acid to a very high concentration. Likely, marginal ulcers are more prone to occur when the acid values are very high. Some surgeons are using the acid index as a criterion for radical resection in order to destroy the acid-bearing area of the stomach, hoping to lessen the tendency for the formation of gastrojejunal ulcer. An ulcer is rarely if ever active in case of frank anacidity.

Hemorrhage. As a rule patients are more frightened by a little blood than any other one thing. In our experience death from copious hemorrhage or repeated smaller hemorrhages is rare. When patients have lost a great amount of blood from an ulcer area the immediate treatment should be medical. Plenty of morphia should be given, the patient kept quiet and nothing given by mouth for a day or two. Blood transfusion after a few days will quickly bring the blood back to near normal and then surgical interference may be considered. We believe that more patients will be harmed than helped by immediate operation in case of massive hemorrhage.

Sooner or later recurrent hemorrhages demand surgical treatment. When possible, the ulcer should be excised or the vessels ligated in order to lessen the circulation to the ulcer area. It should be clearly understood that no type of operation will absolutely safeguard patients against subsequent bleeding. In most of our cases there has not been a recurrence of hemorrhage postoperatively, but a few have bled even after the ulcers have been excised.

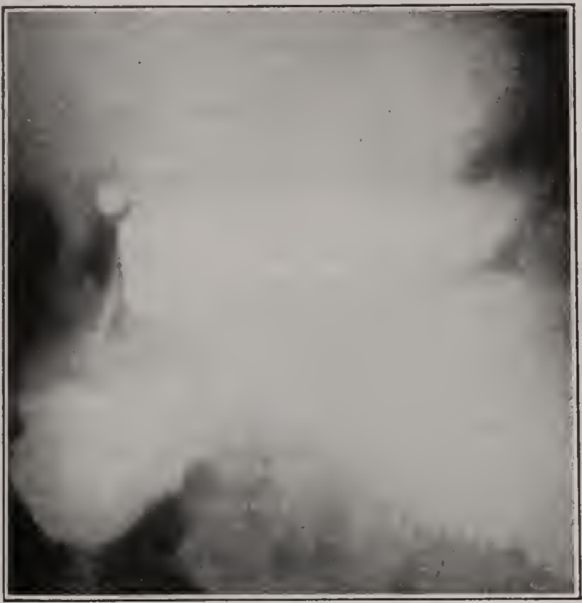

Fig. 3. Duodenal ulcer perforating into the head of the pancreas, causing much pain, especially in the back. Recurrent hemorrhages. Duodenum opened, ulcer cauterized. Partial gastrectomy by Polya method. Recovery and relief complete.

Ulcers perforating into the head of the pancreas commonly become reactivated and bleed freely after the short-circuiting operation of gastroenterostomy has been done. Several of our cases were of this type and it was necessary to open the duodenums, cauterize the ulcers and then resect the stomachs. It is in this group of cases that we are more inclined to perform partial gastrectomy as a primary operation to protect against future bleeding. We have one case where a small ulcer was found on the anterior duodenal wall. It was excised and a pyloroplasty done with complete relief for a while. Later the hemorrhage recurred and a resection was necessary to afford permanent freedom from hemorrhage.

In a study of 440 of our cases we found that 25.2 per cent gave a history of one or more spells of vomiting blood or passing it by the bowel. Only one case died of hemorrhage. We did a posterior gastroenterostomy as a primary operation and later the ulcer penetrated the pancreas. He was moved to a Government hospital and we did not see him again. The surgeon who attended him kindly furnished us with a further report on the subsequent course of the case. The ulcer reactivated and he died of hemorrhage before anything could be done.

Treatment. Surgery of the alimentary tract has been rather slow in development. Probably lack of special training on the part of general surgeons has been partially responsible for this delay. In the early days many mistakes were made, poor results were obtained and lives lost in an effort to advance the benefits of surgical treatment. Such benefits were not well established until the internists had all but lost faith in the surgical management of diseases of the stomach and duodenum.

During the past few years operative procedures have become so well standardized and the technic so perfected that "lines of divergence have turned to lines of convergence" and now the surgeons and internists are working harmoniously in the same team. We believe that most ulcers of short duration, especially in young people, should be treated medically. A fair percentage of them will be relieved and it is entirely possible that some will be permanently cured. When the ulcers have become chronic and patients are at middle life or above, many of them are benefited more by surgical treatment.

We are now advising surgery instead of medicine in (1) all cases of recurrent hemorrhage, (2) obstruction of moderate or considerable degree, (3) chronic cases that do not respond well to medical management, (4) patients who have coincident disease such as appendicitis, cholecystitis, etc., that militates against the medical treatment, and (5) all chronic or acute perforations. The end-result nas justified the surgical treatment. Of the 440 cases we operated upon 112, or about 25 per cent of them. Ninety per cent of the group traced reported relief sufficient to warrant the operation. Only 3.8 per cent developed recurrent or marginal ulcers.

Type of operation. Local excision of the ulcer with some type of pyloroplasty was done in ten cases. This procedure is necessarily limited to a small group of cases. When the ulcer is small, the surrounding tissues in good condition and the duodenum mobile and accessible, such an operation is fairly satisfactory. All pyloroplasty operations are based on the old principle enunciated by Heineke and Mikulicz years ago. The aim is to widen the pylorus, lessen spasm and effect better drainage. The Finney and Horsley operations are very good. In the Judd operation about forty per cent of the pyloric muscle is excised with the ulcer and the closure made in such a manner as to effect better drainage and lessen pylorospasm. We believe it is a distinct step forward in the technic of the old Heineke-Mikulicz principle. It is a simple procedure with a minimum amount of trauma. But the future state of health is not quite so good as that noticed by patients who have been treated by gastroenterostomy.

Gastroenterostomy. When indications are adequate and the technic of performance is properly executed, there is no more satisfactory operation in surgery than that of simple gastroenterostomy. The operation is nonsurgical in principle but up to the present time it is the most satisfactory makeshift yet devised. It is simple, safe and efficient when applied to benign lesions of the stomach and duodenum. Moynihan says its very success has been against it. In this statement he infers that the indication has been carried too far and the operation occasionally done when indications were inadequate.

A gastroenterostomy should never be done except in the presence of a demonstrable lesion. It is far more satisfactory in ulcers of the duodenum than it is in ulcers of the stomach. In our clinic we have disconnected several gastroenterostomies, done elsewhere, on account of ptosis, pylorospasm secondary to extragastric lesions, etc. According to Balfour an unnecessary gastroenterostomy discredits the surgeon but not the surgery.

In order to be most effectual the anastomosis must be made exactly right. It should be placed at or near the bottom of the stomach at the most dependent point. The opening should be ample, two and a half to three inches in length. The jejunal loop should not be too long nor too short. This is very important. In the early days it was necessary to disconnect two of our cases to overcome postoperative obstruction caused by the proximal loop being too short.

The anastomosis should be placed about four to five inches distal to the ligament of Trietz, preferably in the reverse peristaltic position. Our cases have functioned better when done in this manner. We have had a few cases where we were forced to use the isoperistaltic position on account of the location of the jejunal loop far out to the left. The postoperative course did not appear quite so smooth as in the other group of cases where the anastomosis was made in the downward and to the left position.

Another point of great importance in the technic is the "funnneling" of the stomach down through the transverse mesocolon. The anastomosis should be drawn well down and the margins of the mesocolon attached to the stomach at least one inch above the suture line. In a fairly large series of cases done in this manner less than fifty per cent of them have vomited a sufficient amount to justify lavage. The postoperative course has been smooth and uneventful in most cases.

Complications have been few and sequelae negligible except in a small percentage of recurrent ulcers. Three and eight-tenths per cent of our series have developed gastrojejunal ulcers, making secondary operations necessary. When such a condition develops, operation should be done early to avoid the almost inevitable catastrophe of perforation onto the abdominal wall, mesocolon or into the colon. It is a common observation that practically all gastrojejunal ulcers tend to perforate, particularly into the colon. This is a very formidable complication and is fraught with much danger unless handled carefully and treated early.

The medical management of gastrojejunal ulcer is never satisfactory. When such complications occur and come to surgery, a partial gastrectomy should always be done. Even after gastric resection there is a possibility that a gastrojejunal ulcer may form. Balfour and others have reported several such cases. We have just operated upon a patient who developed a marginal ulcer at the site of the gastric resection done two years ago. It was necessary to disconnect the entire anastomosis, resect the ulcer and reset the gastrojejunal anastomosis a little lower on the jejunal loop. This complication, however, is not so common after the resection operation as it is following simple gastroenterostomy.

The end-result in our cases of duodenal ulcer treated by gastroenterostomy has been very satisfactory. A careful follow-up study of seventy-nine showed seventy-five of them had obtained complete relief. Sherron shows ninety-two per cent relieved in five hundred duodenal ulcer cases, where simple gastroenterostomy had been done. Balfour reports eighty-eight per cent complete relief in one thousand cases. He says that only two per cent of the entire series developed gastrojejunal ulcers.

From the above figures one would naturally conclude that simple gastroenterostomy is still the operation of choice in uncomplicated duodenal ulcers, especially those showing a fair amount of obstruction. Partial gastrectomy is unjustifiable as a routine operation for duodenal ulcer. It should be reserved for that group of cases where hemorrhage is the chief symptom, where the ulcers have perforated into the head of the pancreas, and for the recurrent ulcer group.

BENIGN TUMORS OF THE DUODENUM

Benign tumors of the duodenum are not common. In 1917 King reviewed the literature and brought it up to date, reporting a total of 119 nonmalignant tumors of the intestine, five of which were in the duodenum. Since that time Balfour has noted eight additional cases in the literature and added six of his own, making a total of 133 cases. Nineteen of them were in the duodenum. Most of the cases reported presented symptoms referable to the gastrointestinal tract, the most significant being hemorrhage. The diagnosis must be made by roentgenologic study and at operation. The operative mortality is not particularly high and the end-result has been satisfactory in most cases treated surgically.

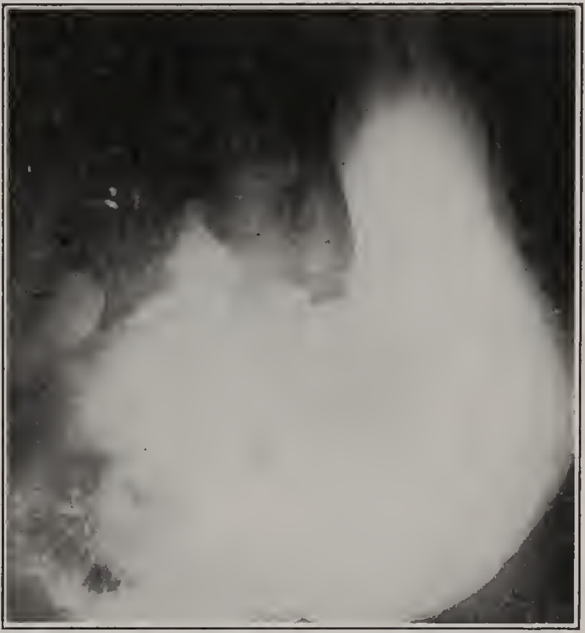

Fig. 4. Duodenal diverticulum in second portion. Six hour retention. Associated with cholecystitis. The gallbladder and diverticulum were removed. Recovery.

In our series of stomach and duodenal lesions, we have not encountered a benign tumor of the duodenum but we are constantly on the alert for them. When hemorrhage is the chief complaint and no ulcer is found, benign tumors in the duodenum should certainly be considered as a possible cause for the bleeding.

DUODENAL DIVERTICULUM

With increased experience we are finding this condition more frequently. Heacock has recently reported a series of diverticula of the duodenum. In 1540 consecutive roentgenologic examinations of the stomach and duodenum at our clinic, he found fourteen cases of duodenal diverticula, an incidence of .9 per cent. Others have been added since that time. Various authors have reported other cases but the percentage of incidence has varied somewhat, depending upon whether the material used was from roentgenologic study, autopsy or surgical findings.

The condition is described as being both congenital and acquired. Clinically, diverticula are usually associated with cholecystitis or duodenal ulcer and the symptoms are probably due to the associated lesion rather than to the diverticulum. Two of our cases have been confirmed at operation and both excised. One of them was associated with a diseased gallbladder and the other with a duodenal ulcer. There was no mortality following the operations and the patients are both entirely well.

The condition is comparable to hernias elsewhere. The size of the osteum is very important. When the neck of the diverticulum is smaller than the sac, retention may occur and produce ulceration or even perforation. It is probable that few of the cases demand surgical treatment but, since they are potentially dangerous in their manifestations, they should always be noted and patients forewarned of their possibilities. Most of the cases that have been reported have been found recently by the roentgenologists.

Surgeons are dependent largely upon the clinicians and roentgenologists for the diagnosis of stomach and duodenal lesions and deserve all the additional information that can possibly be given them prior to operation. It behooves the roentgenologists, therefore, to be ever on the alert, making a special effort to observe and report all anomalies, abnormalities and diseased conditions of the stomach and duodenum. Heacock properly says that lack of clinical significance cannot be offered as an excuse for not finding a diverticulum. As time goes on, and the experience of the surgeons, clinicians and roentgenologists increases, a greater number of diverticula of the duodenum will be found, treated and reported. The subject is of more than passing interest and will no longer be listed in the category of autopsy curiosities.

20 South Dunlap Street.

UNDULANT FEVER*

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Undulant fever is also variously known as relapsing fever, Malta fever, undulating fever and goat fever. Owing to the present wide distribution of the disease, the term Malta fever is no longer appropriate, and one of the British commissions for the study of the disease recommends that all other names be discarded in favor of undulant fever. It is a disease of wide distribution, characterized by drenching sweats, loss of weight, aching in bones and muscles, severe headache, and prolonged and tedious convalescence, with which wealth of clinical manifestation there is a surprisingly small amount of pathology.

Undulant fever was more or less of a medical curiosity in the United States prior to 1927, because of failure to recognize such cases as occurred. Yet the disease is in fact by no means new. On the contrary, it was forty-three years ago, when bacteriology was young, that the British appointed their first commission for the study of Malta fever, and it is due to the British investigators of that period, and especially to Bruce, a British army surgeon, that we know the etiology of the Malta cases.

A very disabling disease was attacking British soldiers and sailors stationed about the Mediterranean. In six years there had been 2200 cases in the Malta garrison, and about the same number in the fleet. It was said that patients entering the hospital for any complaint whatever invariably contracted the disease.

Bruce and his coworkers discovered the responsible organism and gave it the name brucella melitensis. This commission also traced the source of infection to goat's milk, and advised against its use. A prompt decline in morbidity among soldiers and sailors was the result.

The conclusions of this commission received striking confirmation at a much later date, when in 1905 sixty-five pure-bred goats were shipped from Malta to the United States. During the voyage milk from these goats was used on shipboard, with the result that a great number of the crew arrived in port with severe cases of Malta fever.

The first case recognized as having developed in the United States was identified by Craik in 1903. Cases of Malta fever were subsequently seen from time to time in the United States, but usually in districts where goats were to be found. Where they had the fever but no goats, it was assumed that the patient had at some forgotten time drunk goat's milk. There is a goat-raising district of some extent in Texas, where undulant fever has been endemic for many years, but the total number of cases has been comparatively small.

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*Read before King County Medical Society, Seattle, Wash., Oct. 14, 1929.

In 1913 Larson and Sedgwick suggested the possibility that the disease might be transmitted by other animals than the goat, and also made the suggestion that there might be a connection between it and the cow abortion disease. DeForest claimed to have made this same suggestion at an earlier date. Neither, however, offered any proof in support of his theory, and neither was taken seriously.

Meanwhile the United States Government was carrying on research work in cattle abortion, which had become so serious a menace to dairymen and stock-raisers. In 1918, Alice Evans, one of the government laboratory workers, demonstrated the near relationship, if not the actual identity, of brucella melitensis, found in goats and causing Malta fever, and brucella abortus, causing abortion in cows.

Little attention was given to her discovery till eight years later, when Carpenter, a French veterinarian, isolated brucella abortus both from the blood of a patient and from the patient's milk supply. The work of Alice Evans was then reviewed, and she was given the credit and recognition that were her due. It is one of the tragedies of medical progress that this investigator has herself become a victim of undulant fever, and is now, or was until recently, a patient in Johns Hopkins Hospital.

In this connection I might say that the number of laboratory workers who have contracted the disease is high. Only a few days ago Harrison had to give up his work on the blood of undulant fever patients because of infection. He is but one of the five or six who have contracted the disease in the Public Health laboratory in Washington, presumably from accidental needle punctures. Another brilliant worker to be disabled is Francis, the principal contributor to our knowledge of tularemia, whose monumental work on the disease has been so important.

The onset of undulant fever is usually gradual. The patient feels tired, so tired that he declares he doesn't care if he never does anything again. Perhaps in a few days he feels better, tires less easily, becomes more cheerful, and decides he has only a touch of the flu. After an interval, varying from a few days to several weeks, he again begins to tire easily and to sweat. Next to the fever curve, this excessive sweating is the most striking thing to be noted. Following the daily sweat the patient feels temporarily better.

The fever may properly be described as undulating waves, starting at normal or less and gradually increasing to 102° or 103°, only to drop again during the night. In the morning it begins to rise again and reaches a higher maximum than the day before. This is repeated daily during the acute stage, till the temperature reaches 103° or 104°, when the height of the fever spike becomes a little less each day, always dropping to normal or near normal during the night. Then comes an interval of from three to five days of apyrexia, after which the wave is repeated, the height of the same becoming greater or less, according to whether the patient is entering farther into the disease or coming out of it.

It is very disappointing to the patient to find another wave beginning when he has decided that he has had the final one, and there seems to be no way of being sure about the matter. The patient hopefully prepares to resume his usual activity only to find that he is not yet able to do so.

The abdomen is sore, especially on the left side, and the patient may be afraid he has intestinal tuberculosis or possibly malignancy. The appetite is poor and constipation usual. Weight falls off twenty to thirty pounds, and soreness of back and muscles may be complianed of, even after there is otherwise complete recovery.

Many of the milder cases are ambulatory and come to the office even when carrying a temperature as high as 103°. Undoubtedly some of the patients who have been given a diagnosis of walking typhoid, but without Widal confirmation, have really been suffering from undulant fever. Some cases we doubtless let slip past us labelled influenza. Suspected cases of tuberculosis sometimes make a surprisingly rapid recovery, and it is not improbable that some of them may be undulant fever.

Diagnosis may be confirmed in one of three ways, or more positively by at least two of the three. These are the agglutination test, isolation of the organism and the intradermal test. While there seems to be more or less confusion in the minds of different authors, in general it may be said that all true cases will respond to the agglutination test, and practically all to isolation of the organism. The intradermal test promises much and is certainly much the simplest, but it is still on trial.

I leave further discussion of the tests to men who are familiar with the laboratory side. Laboratories running routine abortus tests frequently pick up cases of undulant fever. Children are said to be immune up to six years, but Kohlbry of Duluth reports a case in a patient one year old. Another investigator, on routine examination of children using milk that was not selected, found several who responded to agglutinization, while in the same number of children using milk certified against abortus no agglutinators were found.

The pathology is meager. An enlarged spleen occurs in fifty per cent of the cases. There may be slight edema in the base of the lungs. There are no Pyer's patches, and enlarged mesenteric glands are not the rule. Pneumonia is absent except in the fulminating type, and is certainly less common than in typhoid. Brucella has been isolated from the gallbladder. Indeed, cholecystectomy has occasionally become necessary because of abortus infection. Although quantities of the organisms are passed in the urine, the kidneys are not affected.

I have said that some cases are ambulatory. One patient whose case has been reported carried on his threshing throughout the season, though his temperature was 102° and 103°. A butcher continued to tend his shop throughout his illness. A housekeeper, who was sick for six months, spent only five days in bed. These are of course the milder cases, and it is these we are apt to miss. At the same time, it is not unusual for a patient to be exceedingly ill in a hospital for weeks without a correct diagnosis.

Since the causative organism appears in the milk from aborting cows, it is fair to ask if it also produces abortion in women. DeLee states, "Abortion from such a cause occurs in the human, as cases reported by Vignes and DeForest prove." DeForest has recently again called attention to the fact that he published an article in 1908 on infectious abortion in cattle as a complication in pregnancy. Larson and Sedgwick published the report of an apparently proved case.

It is noted by some observers that sterility is high in women having a proved abortus history. I think it is doubtful if abortion is more frequently caused by the high temperature of undulant than by that in other fevers. It is, however, one of the many problems of this interesting disease which calls for more investigation.

It should not be supposed that the goat and the cow are alone responsible for undulant fever, for the blood of pigs and horses may also become infected. Indeed, an increasingly large number of butchers, pig-stickers and other stockyard workers are being reported as having contracted the disease from hogs. Keefer reported the first porcine case in 1924. Other animals may yet be found responsible in a lesser degree. There is no proof of contact infection in man and questionable proof in animals. Monkeys previously free from the disease do become infected, but in this case it is impossible to exclude the inhalation of dust that has been contaminated by urine.

Diagnosis. The clinical picture is one of profound septicemia. Typhoid is at first suggested, but there are no rose spots and no Widal reaction. Although lung involvement is not common, tuberculosis is often suspected, even though there be repeated negative sputums. Syphilis, that dumping ground for doubtful diagnoses, may be charged with it, even though the Wassermann be repeatedly negative. I say repeatedly, for these patients have been known to be under diagnosis for weeks, charged first with this disease and then with that, before a correct diagnosis has been arrived at. If, as sometimes happens, there are swollen joints, rheumatims is thought of. Arthralgia and muscular pains are common but variable. Swellings are not red and hot, as in rheumatism, and do not persist for so long. Pains in the back and calves may continue throughout and after convalescence.

Nutritive changes. Loss of weight is the rule, and may be from ten to thirty pounds.

Prognosis. Mortality is given at from two to three per cent. Except for the fulminating type, where the patient dies in the first weeks, practically all cases recover. To hazard a guess as to the probable duration of an attack is foolhardy. Reported cases range from six weeks to two and a half years, with one suspected case of five years duration. The average is one hundred and twenty days.

As in typhoid, the patient continues to be a carrier after apparent recovery. He may continue to secrete organisms in the urine for a long time without impairment. He probably continues to secrete them in the stools, though it is only this summer that the organism has been thus recovered. It was noted by the early Malta investigators that there were people who carried melitensis in the blood and who were not and never had been sick.

It is, then, with a little uncertainty that we tell a patient he is now cured. For what assurance have we that the left-over organisms may not stage a comeback at some future time? It is to be hoped that the lively interest now being taken throughout the United States will result in the discovery of some specific treatment, which will insure permanent relief to this much afflicted group of patients.

Treatment. Treatment at present is symptomatic, so far as I have been able to read or observe. Parker administered metaphen with good results, he thinks, dosage not given. Mercurochrome has been used with indifferent results in most reported cases. Acriflavine intravenously is championed by Hoffman of San Francisco. In a recent *Journal A. M. A.* article he reports three cases, and in a communication to me he states that he has since had two more which were promptly cured. He advises amounts that I would not dare give, and states that a severe reaction is to be expected. He advises .3 to .4 gram on alternate days for three doses. In our patient .03 gram was sufficient on one occasion to produce violent epistaxis, emesis and purging. I should like to hear from those who have administered acriflavine for any cause and to know the doses given.

Prophylaxis. Carl Mayor's monkey experiments led him to conclude that milk with few organisms might probably be used with impunity, but that when the number increased per unit of milk, infection was the rule. This immediately suggests the wisdom of pasteurizing, and incidentally fans up the never-ending dispute that always follows. Certainly infected milk will produce undulant fever in some persons, and equally certainly pasteurized milk will not. However, were all milk pasteurized, there would still be left those cases due to contamination with the blood of hogs and possibly other animals.

Distribution. In the whole United States in 1928 but 367 cases were reported, while this year, due to better diagnosis, several states have already reported nearly a hundred cases each. Including the case cited in my paper, but sixteen cases have been reported in the state of Washington. In 1927 there was one, in 1928 one, and so far this year there have been fourteen, eleven of which were from Tacoma, and several of which have been traced to aborting cows. There was one of the porcine variety in a butcher. It seems not to be generally known that undulant fever is a reportable disease, and doubtlessly more cases have been recognized than the above figures indicate.

It has been proven that about fifteen per cent of the herds in western Washington are infected, and the Puyallup Experiment Station workers think that it is more common at the present time than tuberculosis, owing to the tuberculosis clean-up of the past two years. At the experiment station some time ago, they treated six cows with huge doses of acriflavine, which produced violent reactions. Of the six, five continued to harbor abortus for a long time, one cow for sixteen months and one for eighteen. One cow became abortus-free. The station also states that buyers of pure-bred stock now insist upon a negative abortus test before purchase. Segregation is recommended as the stockman's best present solution. Calves are removed from mothers at birth and fed on abortus-free milk.

REPORT OF A CASE

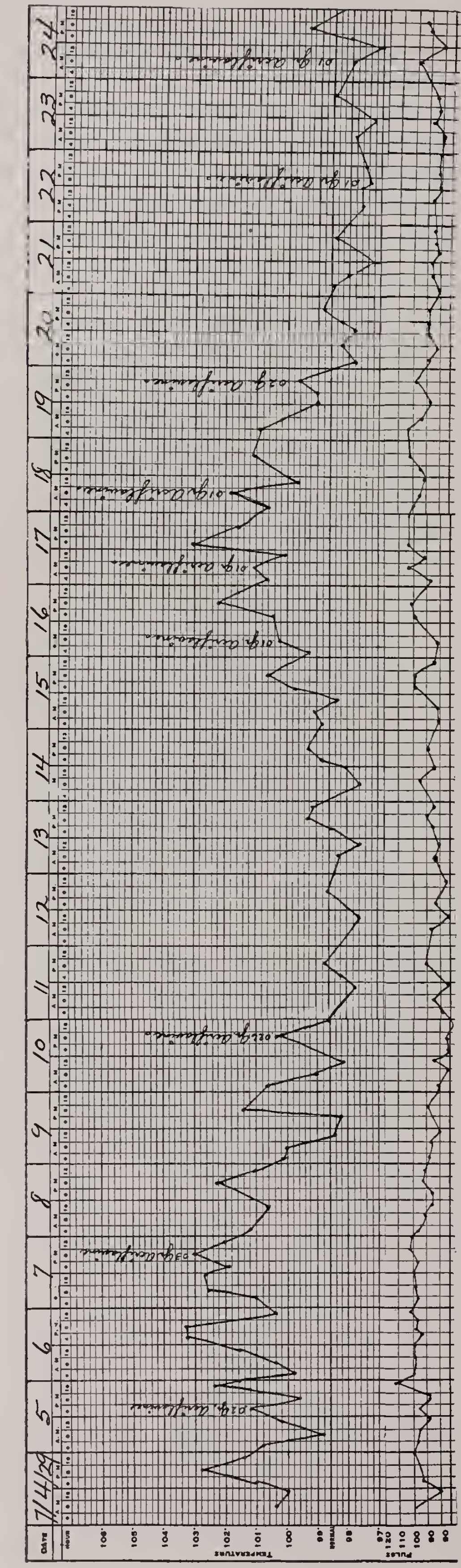
C. B. H., aged 59, a physician and a member of this society, has an uninteresting personal history, except for mild typhoid fifteen years ago, several mild attacks of influenza, and a prolonged though not severe attack in 1928.

About two and a half years ago he began to tire easily. His work drove him. He had to leave his office now and then with what he thought was influenza. He began to take frequent short vacations, but experienced little relief from being tired. Two years ago he took a California trip of six weeks, and during much of that time carried temperature and felt in a less degree as he has felt since the onset of this acute attack. His skin became sallow. He gave up hunting and fishing. Golf, over which he is enthusiastic, quite exhausted him.

Toward the middle of May he became weaker and a few days later went to bed for over a week. He now began to have sweats. With the exception of the one- to five-day apyrexia intervals between undulations, he has not been fever free from that time till three weeks ago. After more than a week in bed, he again returned to his office for two weeks, but continued to feel wretched. He now realized that he was a sick man and was inclined to associate his illness with a left-sided pain in the lower quadrant, which he had noticed off and on for four years, and from which he had not been free for two and a half years.

In the latter part of June he entered the Portland Medical Clinic, where he was given the diagnosis of undulant fever by Dr. N. W. Jones, which had been confirmed by five laboratory tests. I am indebted to Dr. Jones for the hospital history and charts. I pass over notes on physical examination and laboratory reports, as they are negative, or practically so, throughout. No pathologic explanation has been forthcoming for the pain in the lower left quadrant, and it is now wholly absent.

The patient became progressively worse for several days after admission. He ached in every bone and muscle (relieved somewhat by grain doses of codein), and was weak beyond belief. Speaking half a dozen sentences utterly exhausted him. He had drenching sweats and was very miserable. Acriflavine was administered several times intravenously in from .026 to .04 gram doses. With one injection



Part of C. H. H.'s chart, showing characteristic temperature undulations.

the patient had a pronounced reaction, pain between the eyes, emesis, epistaxis and purging. After two weeks hospital residence he improved, though the fever and sweating persisted. His fever chart throughout has shown a series of undulations continuing for several days, with apyrexia intervals of from two to five days.

Since returning from Portland, the patient has been attended by Dr. Finkenstein of Auburn and myself. With occasional discouraging waves of temperature, he has in the main progressed steadily, and is now about to reopen his office. Disregarding his previous history and dating his disease from the onset of the present acute attack, he has been sick for five months.

Our only medication has been three series of acriflavine intravenously and several doses of vaccine furnished by the Hooper Institute at the suggestion of Dr. Jones. Our acriflavine was given in doses of .03 and .04 grams. Remembering our patient's reaction to a small dose on one previous occasion, we were reluctant to administer the large doses recommended by Hoffman. It is possible that our doses were too small. We feel that they were without any benefit to the patient. We gave it in dilutions of 1 to 20 and think that it should not be given in any less dilution, as untoward symptoms may then be recognized in time to discontinue the drug. Vaccine was not administered until the patient was definitely improving and had no effect other than to cause an abscess wherever given. We do not feel that it had a fair trial.

CONCLUSIONS

Undulant fever is a disabling disease of wide distribution in the United States and is often wrongly diagnosed. It should be considered wherever unusual types of fever are met, especially when associated with drenching sweats and undulating fever curves. Its origin is generally from milk of aborting cows, but the blood of pigs may infect butchers, pig-stickers and other stockyard employees. Fiften per cent of western Washington herds produce brucella abortus in milk which pasteurization destroys.

Diet in Etiology and Treatment of Sterility. Donald Macomber, Boston (*Journal A. M. A.*, Oct. 19, 1929), asserts that there is a large body of evidence, both experimental and clinical, which shows that alterations in diet actually do produce sterility. An analysis of the diets eaten by 206 sterile women shows that the deviate in many important ways from normal. The average diet for the 206 women was found to be 71.8 gm. of protein, 80.5 gm. of fat and 227 gm. of carbohydrate, with a total of 1,968.9 calories. A large number of these women show evidence of nutritional disturbances. By increasing the protein in the diet about 10 per cent, likewise the total calories, forty of the 206 women have become pregnant to date, even though practically all of them were seen for the first time within the last two years, and this result has occurred, at least in part, as the result of changes in diet and such other measures as the increasing of exercise, the taking of endocrine medication or the treatment of anemia. It seems to Macomber that regulating diet is a means of treating sterility which one cannot afford to neglect.

UNDULANT FEVER AND TULAREMIA *

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A DISCUSSION OF THE PREVALENCE OF THESE DISEASES BEARING UPON A POINT OF CONFLUENCE OF THEIR SYMPTOMS WHICH MAY MAKE DIFFERENTIAL DIAGNOSIS EXTREMELY DIFFICULT

It has been common knowledge for many years that Malta or undulant fever is a disease contracted from the drinking of infected goats' milk, or from contact with infected goats. Since 1920 it has been somewhat special knowledge that the organism causing this disease is closely related to the organism of infectious abortion in cattle.

In the summer and fall of 1928 many of us were looking with skepticism upon reports of the existence of cases of Malta fever in Oregon. To those who had only a common knowledge of the disease the reports seemed in error, as there are very few milking goats in Oregon and cases were reported where there was no possibility of contact with goats.

The doubt which was somewhat prevalent at that time was present in veterinary circles of the state, and it was with some difficulty that the State Board of Health convinced the Veterinary Science Department of the Oregon State College that the origin of the newly-found human disease was the brucella abortus of cattle. Once convinced, their cooperation has been whole-hearted, with the result that the State Board of Health and the Veterinary Science Department are unearthing some rather astounding facts which bid fair to alter the attitude of hygienic bodies and the public toward the milk industry and to amplify the cry for pasteurization of milk.

I was particularly interested when the intermittent fever of a close friend was reported by the State Health laboratory to be undulant fever. He was a business man of Portland who had no contact with goats or cattle and even drank milk but rarely. From my own knowledge at that time it was hard to believe that the diagnosis was correct and it was not until the nature of the epidemic in the State Tuberculosis Hospital was determined and further confirming reports began to come in from the rest of the state and the United States that the diagnosis seemed possible.

In January of 1929 Bellinger and Levin[1] published a record of an epidemic of undulant fever in the Oregon State Tuberculosis Hospital, of which Bellinger is superintendent. This followed an epidemic of infectious abortion in the dairy cattle of the State Tuberculosis Hospital. The afflicted patients were confined under institutional discipline with no possibility of other milk supply than from the diseased herd. Dr. Bellinger's personal supervision of the hospital farms and his pride in his excellent pure-bred dairy cattle urged investigation, and when the laboratory tests of the patients proved by agglutination that brucella abortus was the causative organism, direct connection between the epidemics in cattle and humans was established.

Formerly the causes for long-continued fevers were considered to be principally typhoid, tuberculosis and sepsis.[2] Levin has found that a high percentage (11 per cent) of the specimens received by the State Hygienic Laboratory for the Widal test, where typhoid or paratyphoid was suspected, gave positive agglutination with brucella abortus.[1] This indicates that approximately 10 per cent of typhoid suspects are in truth undulant fever cases, and suggests that this is not a new disease but it has been with us unrecognized as long as we have had infectious abortion in cattle. It is now necessary to include serologic examination for undulant fever in the differential diagnosis of all long-continued fevers.

Case 1. An elderly woman (aged 69, case No. 35484) lived alone in a house in a small town in the Willamette valley. She had had gastrointestinal upsets for several years and these attacks were gradually becoming more frequent and severe.

In February of 1929 she came to us, was found to have gallstones and her gallbladder was removed. Upon admittance her temperature was normal. The fever immediately following the operation was neither higher nor of longer duration than usual following gallbladder operations, and her temperature returned to normal by the sixth day. It remained so until the fifteenth day after operation, when she began to have daily fever running as high as 102°. This continued in an undulant manner for three weeks. The wound was healed, the widal reaction was negative and the woman had no marked symptoms other than a general soreness and weakness and the elevated temperature.

Blood was sent to the State Laboratory, where the specimen gave positive agglutination for undulant fever in a dilution of 1 to 160. Positive agglutination in dilution of 1 to 80 is considered diagnostic.

The hospital milk is all pasteurized and there was no way of obtaining raw milk while she was in the hospital. She was questioned regarding possible contacts. There were no animals about her household. For at least three years she had been unable to drink milk because of the resulting gas formation and colics. In several months she had tasted milk but once, and that time she had heated it until it was very hot. A discouraging history for undulant fever. She did, however, use cream upon her mush, which

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she told us she obtained from a dairy about a mile outside of her town. Her relatives asked that we refrain from investigating, because the woman feared her neighbors would resent the stir caused by an investigation.

Dr. Levin and I visited the patient's home village and went to see the dairyman whose name she had given us. This dairyman stated he had not delivered milk to her for three years. He said he had no infectious abortion in his herd, but that several herds in the surrounding country contained affected animals, and named a neighboring herd in particular, with the owner of which, we deduced from further conversation, he was on unfriendly terms.

We investigated further and found that the patient had for several months obtained one pint of milk daily from a close neighbor, who owned one cow and sold the surplus milk from it. There had been no illnesses from the other recipients of the milk. The cow had calved but five months previously and was again in gestation. She had never aborted.

We reported the case to Dr. Simms, Chief of the Oregon State College Veterinary Department, who caused the cow to be examined for infectious abortion. The examination proved negative. We were as much at sea as ever and we had exhausted every practical possibility. The infection must have been acquired while visiting or traveling and its source was beyond the practical limits of investigation.

This case demonstrates that a negative history of contact cannot be relied upon. It would indeed be rare to find an individual who could be said to have no chance of exposure to infectious abortion. The foregoing case approaches this as nearly as we can imagine.

Case 2. In November of 1928 a woman, aged 46 (case No. 35068), living at Summer Lake, Ore., appeared for examination. She was a housewife, and with her husband was engaged in conducting a hunting lodge. Her personal history was negative previous to the onset of the presenting illness, which was a complaint of rheumatic pains for the previous two and a half months. The onset of the illness was characterized by an abscess on the left shoulder. This was followed by abscesses on the left forearm and small red spots on the hands.

When the first abscess was nearly healed the patient began to have pains from her hips to her knees in the joints and muscles, accompanied by fever and general debility. Then she became steadily better, but was still much discouraged and came to find out whether anything could be done for her, as her local doctors had said that treatment would be of no benefit. They had told her that her trouble was caused by the bite of a deerfly and had called it deerfly fever.

Even though we had this direct hint, she passed through the hands of several of us without anyone suspecting tularemia. Examination showed nothing unusual other than the scars from the old abscesses. Her tonsils were septic. Her teeth showed some periapical infection. The blood count and blood culture were normal. She was not running any fever and appeared to be convalescing from her illness. Her tonsils were removed and her teeth taken care of while she was kept under observation.

During this time, while reading the story of "Francis, the Automatic Man," in the recently published "Hunger Fighters" by Paul deKruif, tularemia was recognized as the probable cause of the patient's illness. It is to be regretted that there are not more authors who write in this simple popular manner to give us books like deKruif's "Hunger Fighters" and "Microbe Hunters," and Clendening's "The Human Body." Such works do more toward establishing confidence between the public and the medical profession than elaborately organized campaigns of propaganda.

DeKruif has brought the obscure, modest, hard-working Francis close to us, has told us of his previously long and apparently futile career in the Public Health Service, of the manner in which he acquired the ability to work tediously on with little hope of success in sight. This acquired characteristic enabled him to go out into Utah on a seemingly hopeless quest, to grind along in low gear for years in the discovery, elaboration and description of a natural history of a new disease of man, until we have one of the most complete treatises in medical literature.

He did not claim to have discovered a new organism, but he did find a new habitat for the organism which his chief, McCoy, had found in the ground squirrel of California eight years before. He was not satisfied with finding a disease and proving its identity by its conformity with Koch's law. For many this would have been enough, and in itself would have been an accomplishment worthy of a lifetime, but Francis searched deeper and deeper into every presented aspect of the disease. He collected cases and studied them. From his findings he hypothecated conditions for research. It is uncanny to look back and perceive the accuracy with which these hypothecations led to the unraveling of this mysterious disease, its serologic and immunologic characteristics, its clinical history, its commercial aspects, its social value and its prophylaxis. All this deKruif has accurately given us in such a way that his story is as fascinating as a mystery story, as dramatic as a novel, as romantic as a romance.

Upon reading of Francis and tularemia, we wired the United States Public Health Service for instructions for shipping blood for examination. We were informed that simply drawing the blood and sending it in a sealed tube to the laboratory was sufficient. We did so in our case and received the report that the specimen proved positive for the bacillus tularensis.

At that time there had been but three cases reported in Oregon. Our patient from Summer Lake told us that she knew of several other cases in her vicinity; that they were recognized by the physicians there and that even the laity was familiar with the disease. This indicates a lack of cooperation upon the part of the local physicians with the Health Department.

Tularemia is characterized by an acute onset, with headache, vomiting, chilliness, chills, aching body pains, sweating and prostration; followed by manifestations of various types: ulceroglandular, oculoglandular, glandular or typhoid-like. It is contracted by contact with diseased animals, knowledge of the species and families of which is becoming increasingly greater. The principal offender is the jackrabbit, but woodchucks, coyotes, groundsquirrels, hogs, wild rats and mice, cats, woodticks, flies[3] and opossums[4] have all been a source of this disease in humans. Recently tularemia has been found in sheep[5] and in a muskrat.[6]

From the sheep report we would expect to find the disease among sheep dressers in the packing houses. Of 455 cases of tularemia whose sources have been traced by Francis, 100 were market men who had dressed rabbits.[3] In a conversation with Dr. Dinse, Chief Veterinarian of the Government Inspection Service of the Swift and Company plant in Portland, I was told he has never found signs of this disease in sheep and that he has no memory of sheep dressers coming down with such an affliction as tularemia.

Tularemia has been diagnosed as influenza, septic infection, typhoid fever, pneumonia, sporotrychosis, tuberculosis and undulant fever,[3] the last because of the similarity between the typhoid type of tularemia and undulant fever and cross-agglutination that exists between the bacillus tularensis and causative organisms of undulant fever. The discovery of this cross-agglutination is further evidence of Francis' thoroughness.

Among the interesting incidents in Francis' great work, deKruif tells of the many days spent in hospitalization for diseases and afflictions contracted in line of duty. A letter to the author from Dr. George W. McCoy, Director of the Hygienic Laboratory of the United States Public Health Service, written last December, stated that Francis was in the hospital with undulant fever, which he contracted while working on this differentiation.

The typhoid type of tularemia resembles both typhoid and undulant fever so closely that often they cannot be distinguished clinically. The phenomenon of cross-agglutination makes a problem as intricate as the differentiation of the typhoid and paratyphoid groups, and calls for specialized laboratory technic.

SUMMARY

1. We have two newly recognized diseases in the Pacific Northwest that must be added to tables of differential diagnosis, tularemia and undulant fever.

2. These diseases possess serologically positive agglutination tests. The Oregon State Board of Health and the United States Public Health Service are prepared to make the tests.

3. There is a clinical similarity between typhoid, the typhoid type of tularemia and undulant fever.

4. There is a serologic cross-agglutination between the bacillus tularensis and the brucella abortus, although it is not so confusing but that skilled workers can differentiate between the two diseases.

5. For the time being bacteriologic materials are so scarce that we had best rely upon state and national health services rather than upon private and commercial laboratories for diagnostic laboratory work.

6. There is evidence of absence of cooperation between the medical profession and these hygiene bodies. To establish the newly found disease cooperation is necessary. Every case or suspected case should be reported to the State Board of Health and the laboratory work performed by them, in order for them to develop a uniform technic.

7. Upon the slightest clinical suggestion, regardless of history of contact, these diseases should be suspected and serologic tests employed. All that is necessary is for the physician to send the blood of the patient in a sealed tube to the State Laboratory. In cases of positive reports the State Laboratory should later be given a history of the case.

8. Failure to establish history of contact does not rule out these diseases.

611 Lovejoy Street.

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THE INJECTION TREATMENT OF VARICOSE VEINS AND ITS SEQUELAE*

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It is perhaps not yet generally appreciated by all members of the medical profession what excellent results have been secured, and are still being effected by the injection method of treating varicose veins and its sequelae. There still remains, among some gentlemen of the profession, a feeling that this method of treatment is unsound. Some claim there is danger of embolism, others that the results are not permanent, while some again contend that this injection method is still in the experimental stage, just a "fad." A few exceedingly cautious clinicians are awaiting further evidence before they will come to a decision in its favor.

The passing in Europe of the operative treatment of varicose veins has, I feel, merely preceded by a short interval what will eventually occur soon in America. The procedure will prove in any case a merciful release for the surgeon and patient alike. However, due credit must be accorded those surgeons who in the past rendered the operative treatment eminently effective in the male and fairly successful in the female. No one denies the unfortunate fact that there has been at least thirty per cent of recurrences following the operative procedure, because surgeons did not or could not follow any one definite, standardized operation. The collateral and communicating branches were left undisturbed and the way paved for recurrence.

The idea of injecting veins may be said to have originated following the invention, in 1851, of the Pravaz syringe. Chassaignac and Pravaz, employing ferric chloride, Vallet and Soquet with iodotannic liquor, and Schiassa using red mercuric iodide attempted as early as 1851 and continued to 1854 obliterating injections. Septic phlebitis, gangrene, sloughing, lymphadenitis, septicemia and embolism frequently followed these various treatments; hence the method fell into disuse.

In 1876 there began another era of injection for the cure of varicose veins, ulcer, varicocle and hemmorrhoids. Solutions, such as ergot, alcohol and iron perchloride, chloral or carbolic acid and five per cent alcohol were variously used. In 1894 the French surgical congress, at Lyons, officially condemned the injection of all such strong caustic solutions for the treatments named.

In 1911, following the observation of Professor Linser of Tubingen, waves of enthusiasm in favor of the injection of veins spread throughout Europe. This surgeon noted the obliteration and disappearance of veins after repeated injections of mercuric chloride in antiluetic treatment. Later he used the same process in the treatment of varicose veins. Again, during the World War Sicard, who published his results in 1920, reported similar experience by using sodium carbonate and luargol.

In 1928 Forestier recommended for this treatment sodium salicylate in proportions of twenty, thirty and forty per cent. He also favored the adoption of red mercuric iodide, Genevrier's solution of quinine, dihydrochloride and urethrane, but preferred to all other sodium salicylate.

During the last two years articles in medical journals, even columns in local papers have contained enthusiastically favorable reports of the good results following the administration of the above-named drugs. More recently still sugar solutions have been added to the list. Apparently it makes little difference which solution one chooses, for all yield good results. However, there is no hard and fast prescription for all cases. The skilled technician will from his own experience select the solution which according to his time, equipment, type of patient and vein best meets his requirements. I might add that the process of injection, gradually adopted in America, had some time previously in Continental Europe supplanted the surgical method.

Regarding the selection of suitable cases, precautions absolutely necessary to be taken in all cases, whether treated surgically or medically, are the Trendelenburg, Homan and Mayo tests, which demonstrate the competence or incompetence of the deep circulation and anastomotic valves. The patient's leg is well elevated, after which the varicose veins empty. The large saphenous vein is compressed, and the patient asked to stand up. If the veins remain empty during compression but fill up with a gush of blood from above when the compression is relieved, the test proves positive for valvular incompetence of the great saphenous. If on the patient's standing the veins fill up suddenly, even though compression is still maintained, the anastomoses with the deep veins must be incompetent. Should the compression be relieved and the veins assume still more prominence, the test is doubly positive for incompetence of both saphenous and anastomotic valves. Finally, if after compression, the veins fill up slowly from below, and fail to dilate more after the pressure is relieved, the test is positively negative and the valves are proved competent.

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* Read before the Thirty-seventh Annual Meeting of Idaho State Medical Association, Lewiston, Ida., July 5-6, 1929.

If when the patient is up and around, he has marked superficial varicose veins and little or no swelling of the ankle, then the deep circulation is sufficient. Another and perhaps better test is to have the patient, while walking, wear a tight bandage for a few hours, compressing the superficial venous circulation. Should this cause great discomfort, cramps in the legs, with or without "pins and needles" sensations in the toes, the superficial veins have probably enlarged to compensate for the loss of the deeper channels which have become thrombosed. In case of doubt it is well to have the patient wear an elastic bandage for twelve to twenty-four hours and note the reaction. If then these symptoms are noted, the superficial veins should not be disturbed.

Now a word about varicose ulcers. Differentiation between thrombophlebitic ulcers and varicose ones is important. The former occur in those who do not have varicose veins, but who after trauma or pelvic infection develop thrombophlebitis of deep veins. The edematous glossy skin breaks down and the entire appearance of the ulcer is different from that of the varicose type. The latter are usually the result of a trophoneurotic condition, resulting from a state secondary to development of varicose veins. Multiple flat ulcers with a livid undermined epithelial margin, a history of thrombophlebitis and a negative Wassermann are helpful in the diagnosis of this condition.

If in a varicose ulcer the infection over it and in the surrounding tissue is severe, a good plan is to treat it for a few days by putting the patient at rest and using hot packs of aluminum acetate, one per cent solution, until the cellulitis subsides. It is then feasible to inject the veins about the varicose ulcer which will gradually heel over and the pain subside.

Varicose ulcer shows an inflammatory process, extending widely around the diseased part, revealing sloping edges, coarse granulations and surrounding varicose veins. A syphilitic ulcer differs in appearance and is recognizable by its punched-out, sharply defined edges, its deep-seated, dark red base and enlarged granulations. The tuberculous ulcer, whose undermined base seldom has red granulations but frequently a grayish necrotic exudate, is uncommon. The rodent and the actinomycotic ulcers are so rare as scarcely to deserve mention. Two other types, the trophic and malignant ulcers, may be diagnosed by their history and the exclusion of all the others.

In addition to the usual antiseptic dressing, an ingenious treatment of large ulcers is the application of a flat rubber sponge, extending well over the edge of the ulcer, plus a bandage over the ulcer, bandaged fairly tight. With surprisingly good results, I use a preparation which I choose to call zinchrome, the formula for which is four grams of merchurochrome dissolved in four c.c. of water mixed with anhydrouslanolin, forty-eight grams. Mix separately twenty grams of zinc oxide and twenty-four grams of petrolatum. The latter is melted and strained while warm but not hot into the lanolin mixture.

There are certain precautions and conditions present to be observed in the injection treatment:

1. If there is a history of typhoid, previous phlebitis should be ruled out.

2. Definite contraindication should be kept in mind.

a. Intermittent claudication.

b. Phlegmasia alba dolens.

c. Elderly persons with enfeebled health, particularly those with fragile veins. In such conditions as albuminuria, diabetes, although not absolute contraindications, extensive edema of the limbs (fig. 1), cardiovascular renal disease, previous phlebitis, inject with extreme caution. In varices of pregnancy, until some time after delivery, injections should not be done. It is well to refrain from this treatment during the menstrual period.

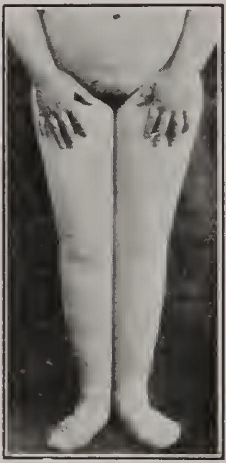

Fig. 1. Venous and lymphatic disturbances of lower limbs. Chronic edema. Injections contraindicated. (After Forester.)

d. It should always be remembered that the arterial circulation of the lower extremity must be in good condition.

e. Varicose veins located almost entirely on the lateral aspect of the leg instead of along the course of the internal saphenous suggest thrombosis of the deep veins. Therefore, they should not be injected unless one is positive of the competence of the deep

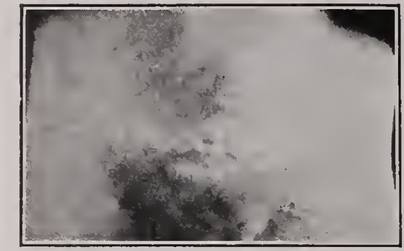

Fig. 2. Collateral venous circulation. Injections contraindicated. (After Forester.)

circulation. Veins about the malleoli and over the crest of the tibia should, if possible, preferably be left alone when they communicate with a main trunk in the soft parts.

f. Collateral varices, located mostly at the root of the limbs or the level of the abdomen, should absolutely not be injected (fig. 2). The dictum of Forestier, "after phlebitis no injection for ten years," should be remembered.

g. Patients having abdominal tumors and cirrhosis of the liver plus varicose veins are not fit subjects for injection.

Early in 1928 I began the injection treatment of varicose veins, following the technic of Forestier, and used a twenty per cent sodium salicylate solution with good results. The first patients injected complained bitterly of pain following the procedure and had recurrent varicose veins following surgery done elsewhere eight years previously. The perivenous reaction was intense, rendering soothing applications necessary for a number of days. However, the end result was perfect. Some patients complained of pain at the time of injection. Genevrier's solution, quinine, dihydrochloride and urethrane, was next used in our injection treatment and it has remained permanent in its application because of the local anesthetic effect of the last named drug and less danger of slough.

For a time some of my colleagues used, with good results, twenty per cent sodium salicylate in ten per cent sodium chloride. They cured effectively a number of cases of varicose veins with accompanying ulcer. Others found sugar solutions productive of fairly good results, but they, too, are now using quinine, dihydrochloride and urethrane more frequently. Although it is true that fifty per cent of the patients I injected had recurrences following surgical procedure done elsewhere five or eight years previously, the results we obtained have been excellent in all cases, even including those with recurrences following surgery (figs. 3 and 4).

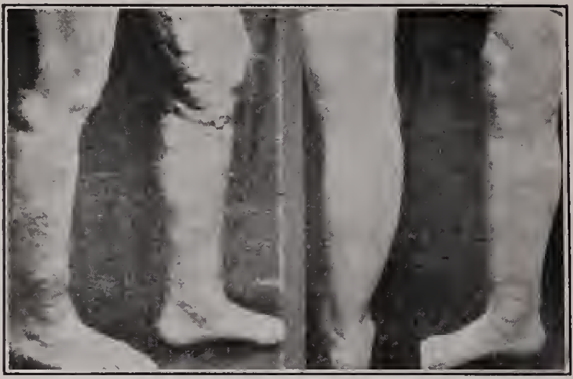

Fig. 3. Fig. 4.

Fig. 3. Recurrence following two previous operations. (After Tunick.)

Fig. 4. Same as fig. 3. After injections. (After Tunick.)

Practically all such patients I treated were females of middle age, and I know of none more grateful. There is, perhaps, one exception, those patients relieved by surgery of a severe hyperthyroidism and its effects. The painful, heavy, aching, bursting feeling no longer exists. The weeping ulcers have healed as if by magic. Likewise annoying, itching eczematoid conditions of the leg below the knee have disappeared. They now go about in comfort.

Regarding the proportionate results of the two methods for the treatment of varicose veins, statistics undeniably favor the injection treatment. Kilbourne of Los Angeles, who has investigated the subject clinically and experimentally, reports positively, after a survey of 4,607 cases, a mortality in America by operative excision of varicose veins of one in 250. The mortality following the injection method cannot, according to him, be so accurately determined, but a study of 50,000 odd cases shows it to be less than one in 4,000.

Recurrences after operation average at least thirty per cent. My belief is that they more nearly approximate forty per cent, and after injection but six per cent. McPheeters recently has reported that the mortality rate from pulmonary embolus following the operative procedure in this condition is .53 per cent as compared with .00754 per cent following the injection treatment, or about seventy times greater following operations. In all fairness there are certain veins which demand repeated injections before obtaining obliteration. It is essential to obliterate the collateral vessels which can be much more easily accomplished by injections. Furthermore, the patient invariably prefers the injection method even in recurrences following surgery.

As to the method, it is simple and relatively unim-

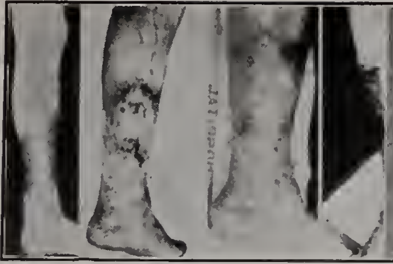

Fig. 5.

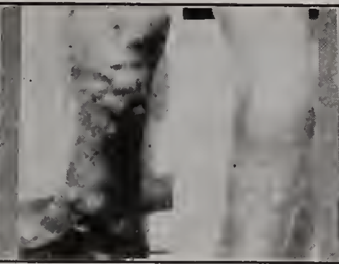

Fig. 6.

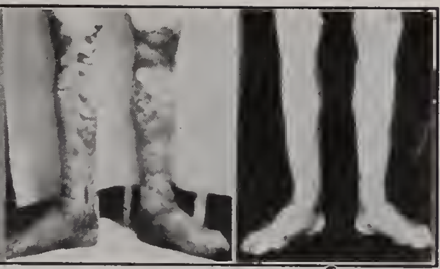

Fig. 7.

Fig. 5. Varicose ulcer before and after treatment. (After McPheeters.)
Fig. 6. Showing before and after treatment. (After McPheeters.)
Fig. 7. Varicose veins both legs before and after treatment. (After McPheeters.)

portant so long as the injection is intravenous, and no leakage allowed. It is, of course, essential to examine the patient, take a Wassermann, and to rule out the above-mentioned contraindications.

Personally, I prefer to inject the veins while the patient is in a standing position and to advise the ambulatory treatment. In my opinion recumbency, resting in bed and lack of exercise are major factors in the production of the dreaded embolism.

As to the practical procedure, first, a two c.c. sterile syringe, fitted with a beveled needle .5 or .6 millimeters in diameter, is filled with the solution. The skin is thoroughly cleansed with alcohol and the injections are made at different sittings, beginning at the lower limb and proceeding upward. The points of injection should be about two or more inches apart. Veins immediately over the malleoli and crest of the tibia must, as far as possible, be avoided. The amount of injected solution depends upon the kind of solution or its causticity and the type of vein. No more than three to four c.c. of the quinine solution has ever been injected at one time and not more than one c.c. at first sitting. In the case of the salicylate solutions, never more than five to eight c.c. should be used.

The needle itself should be inserted at an angle of forty-five degrees to the vein and no injection is made until there is a free flow of blood into the syringe. This point is imperative as well as always to inject slowly. Firm pressure should be applied a few minutes after removing the needle. This precaution avoids back flow, ecchymosis and slough. In the larger varicosities pressure should be maintained for a number of hours.

Should ulcers be present, care should be taken to render them surgically clean. Rest in bed for a few days is recommended as well as hot dressings of one per cent aluminum acetate or any other antiseptic solution. The principal veins emanating from the ulcer are first injected, later the main trunks (fig. 5).

Veins of the thigh may be skillfully injected, but never any collateral varices in the groin or above it. Only when absolutely necessary, should a tourniquet be used. When all details have been duly considered, the fragility of the veins and arterial circulation taken into consideration, people who have attained the age of seventy have been injected and the results proved favorable.

There is as yet no one solution which can be considered entirely adequate for every case. While I have been partial to quinine, dihydrochloride and urethrane, my colleagues report equally good results from sugar solutions as well as from salicylate mixtures.

All types of veins have been injected, from an isolated saccular varix to a fully developed tortuous cavernous mass of varices (figs. 6 and 7) and also uniform dilations of the larger trunks. The general practice has been to inject the main trunks first and later, as needed, any communicating branches, always excepting the ulcerative conditions. The recurrences which I have noted following surgery, done at least five years previously, have been chiefly in communicating branches and have disappeared after the injection treatment.

Patients should be instructed not to expect results until a period of four or six weeks has elapsed. They are advised to return from time to time for inspection and injections are then often found necessary in communicating branches. Once a vein is definitely sclerosed by the injection method, it is impossible for it to function again.

Certain precautions should be taken before the injection treatment is begun:

1. The removal of active foci in the teeth and tonsils is especially indicated.

2. Flat foot, if present, should be taken care of along with the injection of varicose veins.

3. In the obese a basal metabolism should be taken and desiccated thyroid, pituitary and ovarian glandular therapy prescribed, particularly in the

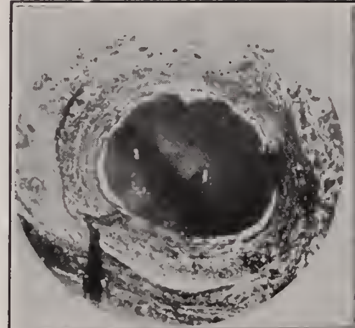

Fig. 8

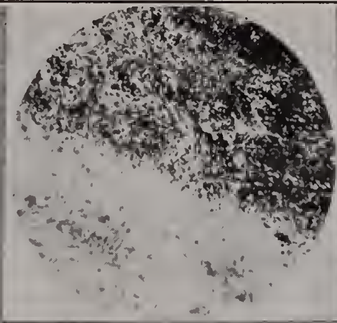

Fig. 9

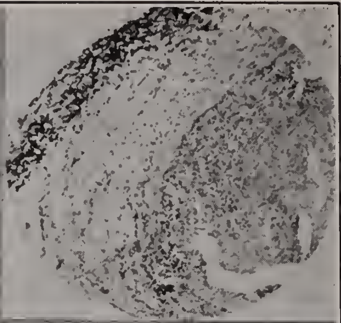

Fig. 10

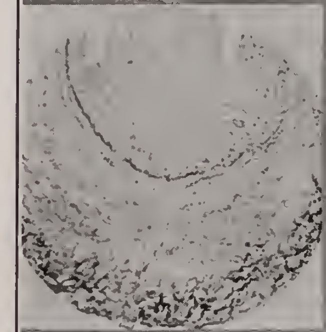

Fig. 11

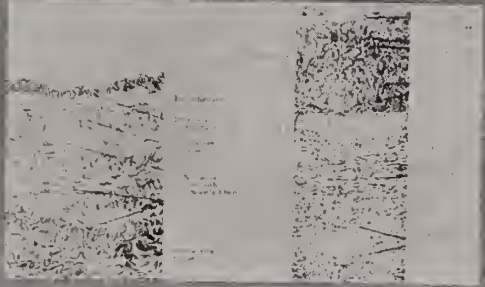

Fig. 12

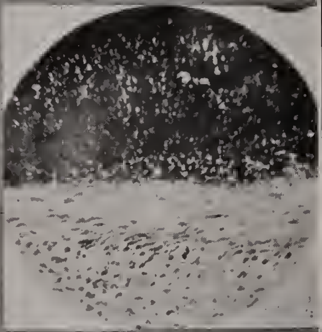

Fig. 13

Fig. 8. Section of vein one week after injection. Reaction in all coats. Vasa vasorum dilated. Intima destroyed. (After De Takats.)

Fig. 9. Same as fig. 8. High power note proliferation of fibroblasts and capillary buds. (After De Takats.)

Fig. 10. Vein 14 days after injection. Note the organization. (After Greensfelder and Hiller.)

Fig. 11. Vein about three weeks after injection. (After Greensfelder and Hiller.)

Fig. 12. Normal vein and injected vein, showing leucocytic infiltration and beginning organization of thrombus. (After McPheeters.)

Fig. 13. Thrombus in vein result of infection. No injection treatment. No tendency of thrombus to organize. (After De Takats.)

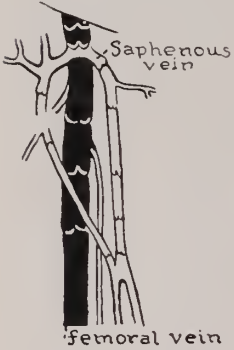

Fig. 14.

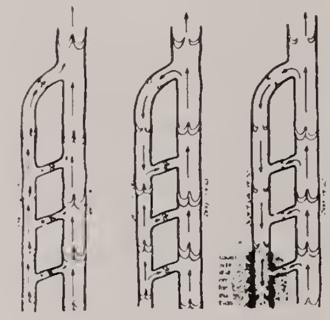

Fig. 15.

Fig. 14. The internal saphenous vein forms a closed loop on the thigh. (After Delbet and De Takats.)

Fig. 15. Diagramatic representation of (a) nominal flow in superficial and deep veins, (b) beginning reflux in superficial veins, (c) complete loss of valve function in superficial and communicating veins. (After McPheeters.)

female. The treatment will naturally depend upon the degree and type of obesity.

There is a theory prevalent that one of the causes of varicose veins is an endocrine disturbance. It would seem more logical to believe that the cause is undoubtedly based upon, first, the inheritance of poor vascular tissue. The remaining underlying causes are practically always explainable upon an obstructive basis. Tight bands about the knee or an obstruction band in the fascia lata, where the saphenous vein dips down to the femoral, are known to have been etiologic factors. The production of a vicious circle and reflux which follows secondarily to these causes and also the breaking down of the valves results in dilatation and varicose veins. This is well illustrated in figures 14 and 15, as well as the stagnation of the blood which precedes the production of an ulcer. There may be obstructions above Poupart's ligament which mechanically cause a retardation of the return venous flow, such as pregnancy, constipation and pelvic tumors. Occupations requiring patients to be on their feet for long hours at a time are great contributing factors in this trouble.

Now it has been shown that the disappearance of the vein is due to an obliterating sclerosis. The endothelium is injured by a chemical irritant and the process of inflammation is started. The vein either collapses and the surfaces of the endothelium are held together by exudate, or a definite thrombus is formed which organizes rapidly. Fibroblasts and newly formed capillaries, red blood cells and leucocytes enter the thrombus from the intima and vein wall (figs. 8, 9, 10, 11, 12).

In an infectious process, the thrombus hardly shows any roots of fibroblasts and capillaries emerging from the vessel wall (fig. 13).

The process of organization and obliterating sclerosis extends over a period from forty-eight hours to a month or six weeks.

In the sclerosing process there may be three degrees of reaction. First, partial sclerosis in which the walls merely thicken without obliteration; second, sclerosis, with obliteration in which the veins become hard and lose their lumen, and after a few days turn into a solid cord; third, obliterating sclerosis with perivenitis.

The reaction is a venitis, and is substantially different from an infectious irritation of the vein called phlebitis. Venitis is localized, generates a very adhesive clot, does not give rise to pain or to general edema of the limb, and leaves an atrophied cord. In phlebitis there is frequently an extension from the superficial network to the deep lying network, causing edema. The clot is loose and afloat in the blood. There is pain. Atrophy does not take place. The vein remains hard and bulky and further attacks of infection are possible. Phlebitis gives rise to embolism. Cases of embolism from chemical venitis are so rare that we can think of them only as an extremely remote possibility.

SUMMARY

The mortality from pulmonary embolism following operative excision of varicose veins is about seventy times greater than following the injection treatment. With good technic and care the element of risk is essentially negligible.

Recurrences after operation average at least thirty per cent and after injection approximately six per cent.

The method is conservative, safe, simple, easily applied and harmless. The end-results are excellent, the relief wonderful.

From the economic standpoint it is ideal. The patient may continue with his occupation during the treatment. Neither work nor pleasure is interfered with.

Taken as a whole, this method has answered very well and seems to have brought about results, without hospitalization, which are so much better than were possible by laborious operations which now appear unnecessary except perhaps in isolated cases.

(Bibliography, omitted for lack of space, will be published with reprints.)

DIABETES

A STATISTICAL STUDY OF THREE HUNDRED CASES *

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The chief value of statistical studies is the opportunity given by such reports for the correlation of the data of various authors. This series, although small, comes from a section of the country which has not produced as yet any very large series of cases of diabetes and is comparable to the statistical reports of other series only when the population of the districts from whence the reports arise is taken into consideration.

During the period which this study covers, January 1, 1919 to January 1, 1929, the total number of patients admitted to the Clinic who received general examination was 10,320. (This is 50 per cent of the total admissions.) Thus the incidence of diabetes among our patients receiving general examinations was 3.44 per cent. The three hundred cases represent only those patients with diabetes who received treatment and not the total number of diagnoses of diabetes. The period of time during which these cases were observed covers ten years, although only forty cases were seen previous to six years preceding the date of admission of the last case included in the report. No cases with less than one year of observation are included unless dead; thus no patient who was seen after January 1, 1928, is included.

FOLLOW-UP STUDIES

Follow-up studies were made as of date January 1, 1929. The figures for living and dead are compiled on that date.

	No.	*Per cent*
Known living	174	58.
Known dead	83	27.6
Unknown	43	14.4

Chart 1. The known living and dead January 1, 1929.

DURATION

The percentage of patients whose diabetes had a duration of over five years and ten years for both the known living and the known dead groups respectively is set forth in the following table.

Living	
Duration over 5 years	46.5 per cent
Duration over 10 years	11.5 per cent
Dead	
Duration over 5 years	37.5 per cent
Duration over 10 years	20.5 per cent

Chart 2. Duration of the disease among the known living and dead diabetics.

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* From the Mason Clinic.

* Read before the Fortieth Annual Meeting of Washington State Medical Association, Yakima, Wash., Aug. 29-31, 1929.

AGE INCIDENCE

In fifty-four per cent of the patients onset was in the fifth and sixth decade. In the first, second and third decades incidence was about equal, and in the fourth decade incidence was slightly greater than in the seventh. Sex incidence was about equal for males and females in the series, there being 148 males and 152 females.

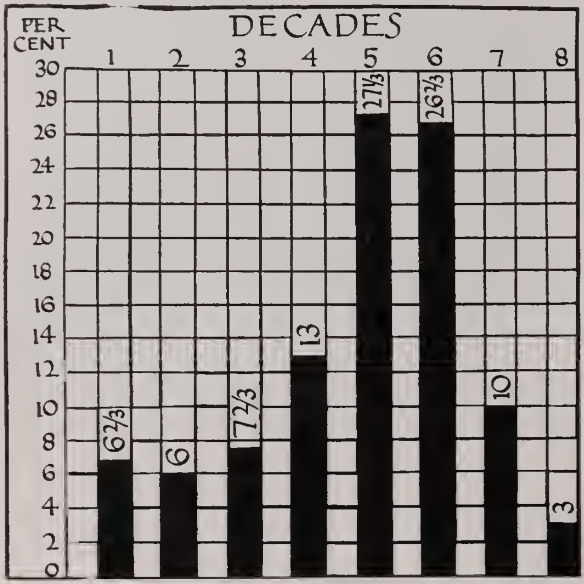

Chart 3. Age incidence.

HEREDITY

A positive hereditary or familial history of diabetes was obtained in 20 per cent of the cases. The disease was hereditary in 12 per cent and familial in 9 per cent. The figures in various series vary a great deal in reference to this factor. This may be due to varying ability to obtain or to give a complete history of this item or may depend upon whether or not the factor of heredity is considered positive only when the disease occurs in father or mother. In this series diabetes occurred in the father or mother in 7 per cent of the cases and more often in the mother than in the father. Eight families, however, each produced three brothers and sisters with diabetes; one family produced four diabetic brothers and sisters, and in the case of one patient both father and mother had the disease.

RACE

Fifty-three per cent of the patients were offspring of American born fathers and mothers. The other 47 per cent were about equally divided between German, English, Scandinavian, Irish, Jewish, Scotch, or Canadian born or of that extraction respectively.

WEIGHT

The best weight during the lifetime of the patient and the weight at the first examination are shown in the following chart.

- Best weight
  - Males
    - 40 per cent were over 20 per cent overweight
    - 24 per cent were over 30 per cent overweight
  - Females
    - 52 per cent were over 20 per cent overweight
    - 30 per cent were over 30 per cent overweight
- When first examined
  - Males
    - 40 per cent were above normal
    - 60 per cent were normal or less
  - Females
    - 52 per cent were above normal
    - 48 per cent were normal or less

Chart 4. The weight factor in this series.

BLOOD SUGAR

On admission the blood sugar ranged from normal to 1500 mg. per 100 c.c. Two patients were admitted with blood sugar of 1500 mg. and both died within twenty-four hours. One patient was admitted in coma with a blood sugar of 1000 mg. per 100 c.c. and survived. Eleven patients had blood sugars over 500 mg. per 100 c.c.

The average blood sugar content of the blood on first admission, on discharge from the hospital, and one year later is set forth in the following table.

- First admission
  - 233 patients averaged 286 mg. per 100 c.c. (fasting)
- On discharge from hospital
  - 220 patients averaged 159 mg. per 100 c.c. (fasting)
- One year later
  - 166 patients averaged 186 mg. per 100 c.c. (fasting)

Chart 5. Average blood sugars.

COEXISTING DISEASE

			Number	*Per cent*
Gallbladder disease			45	15
Kidney disease			44	15
Thyroid disease			17	6
Simple goiter	4			
Toxic adenoma	5			
Nontoxic adenoma	7			
Exophthalmic goiter	1			
Apoplexy			7	2
Heart disease			42	14
Coronary disease	8			
Cardiac insufficiency	34			
Carcinoma			9	3
Rectum, colon, liver, cervix, breast, larynx, peritoneum, each one				
Pancreas two				
Arteriosclerosis			119	40
Grade 1	47	16 per cent		
Grade 2	54	18 per cent		
Grade 3	18	6 per cent		
Blood pressure				
150-200 mm. Hg.			76	30
200-250 mm. Hg.			13	5
Normal (below 150)			168	65
Not recorded			43	
Syphilis			11	4
(Wassermann recorded 278 cases)				
Tuberculosis (pulmonary)			7	2

Pregnancy—total pregnancies	5
Living children (all term)	3
Spontaneous abortion (2 months)	1
Therapeutic abortion (6 weeks)	1
Complication of pregnancy	0
Complication of diabetes	0

Chart 6. Showing the nature of coexisting disease.

A diagnosis of gallbladder disease was confirmed by operation eight times, was made on clinical history in all cases so diagnosed, and was supported by Graham Cole study in about one-third of the patients receiving such a diagnosis.

A diagnosis of kidney disease was based in all instances upon the presence of albumin and casts in the urine or evidence of nitrogen retention in the blood.

A diagnosis of apoplexy was made on the usual criteria and confirmed in two instances by autopsy. A diagnosis of coronary disease was confirmed in two instances by autopsy.

Diagnoses of carcinoma were confirmed by biopsy or autopsy with one exception.

In grading arteriosclerosis palpation of arteries in the arms and feet was recorded as follows: an artery that rolled was graded 1; an artery that was tortuous or in which pulsation could not be felt was graded 2; multiple marked evidence, that is, in the eyes, feet, and arms, was graded 3. In about one-third of the series radiograms of the feet were made.

Syphilis was less common among the diabetic patients (4 per cent) than among one thousand consecutive general examinations, where the incidence was 6 per cent.

Among the unusual coexisting conditions were one case of hypopituitarism, one of acromegaly, and one of combined lateral sclerosis of the cord.

OPERATIONS

Fifty-two operations were performed upon 45 patients, 35 majors and 17 minors. Two patients undergoing operations died. Both were amputations through the thigh. The mortality was 3.8 per cent of the total operations or 5.7 per cent of the major operations.

	No. of patients	*Died*
Major operations		
Cholecystectomy	8	0
Appendectomy (acute)	7	0
Thyroidectomy	5	0
Amputation of leg	5	2
Mastoid (radical)	2	0
Carcinoma, breast	1	0
Nephrotomy	1	0
Ovarian cyst	1	0
Cholecystotomy	1	0
Hysterectomy	1	0
Carcinoma, peritoneum	1	0
Osteotomy	2	0
Total	35	2
Minor operations		
Epidydymectomy	1	0
Tonsillectomy	4	0
Therapeutic abortion	1	0
Cataract	2	0
Carbuncle (excision)	3	0
Cyst of breast	1	0
Infected hand	2	0
Castration (teratoma)	1	0
Perineorrhaphy	1	0
Hemorrhoidectomy	1	0
Total	17	0

Chart 7. Surgical incidence.

COMA ACIDOSIS AND GANGRENE

Acidosis severe but the patient able to talk and swallow occurred in 6 per cent of the series. Complete coma occurred in 8 per cent and gangrene in 8 per cent of the series.

Prompt treatment of acidosis practically always prevents coma. Early treatment of diabetic coma should be universally successful today. Often success in the treatment results in a failure to save life because of the presence of complications, chiefly infections and cardiovascular-renal disease, which does not respond to treatment after coma is relieved. The longer coma has been present the greater is the cellular damage that has occurred and the opportunity for success in treatment is correspondingly less.

Of the twenty-four cases of coma fourteen died. Seven of these were treated by the author. Three occurred before insulin was available. Two patients who had been in coma forty-eight hours died within twelve hours after reaching the hospital, and two died, one of uremia and the other of pneumonia after the laboratory findings indicated that ketonemia had disappeared. Six patients with uncomplicated diabetic coma treated by the author lived.

Eleven patients in diabetic coma were treated elsewhere. Of these, seven cases died; three were uncomplicated; and four were complicated by other serious conditions. Four cases, all uncomplicated, lived.

It is sincerely hoped that this mortality among both the cases treated by the author and those treated elsewhere will be improved in subsequent reports from this Clinic.

Number of cases of coma		24	(8 per cent)
Treated elsewhere		11	
Died			
Complicated	4		
Uncomplicated	3		
Total	7		

Cured 4
Treated by the author
Died
Complicated 2
Uncomplicated (3 before insulin) 5
Total 7
Cured 6

Chart 8. Data of patients with diabetic coma.

OCULAR FINDINGS

Retinal changes (retinal findings recorded in 275 patients) were recorded as slight in 8 per cent and marked in 8 per cent. Lenticular changes (lenticular findings were recorded in 273 patients) were recorded as present in 7 per cent.

TEETH

It was noted that at the time of first observation the teeth were absent in 23 per cent and showed marked pyorrhea or apical infection in 33 per cent.

INSULIN

Twenty-four per cent of the series received no insulin. Seventy-six per cent averaged 29 units daily when discharged from the hospital, the highest being 70 and the lowest 3 units daily. The greatest amount of insulin given to any patient in twenty-four hours was 800 units.

NITROGEN RETENTION

The belief is prevalent among the members of the medical profession that a nitrogen retention as indicated by a blood creatinin of 3 mg. per 100 c.c. or higher indicates a probable duration of life not to exceed six to twelve months. However, the following table shows that a considerable number of patients live three to five years after the creatinin reaches this level and occasionally an exceptional case greatly exceeds this, as the patient who lives five years after the creatinin was found to exceed 5 mg. per 100 c.c. It means nothing that many patients die within six to twelve months after the creatinin is found to exceed 3 mg. per 100 c.c. because we do not know for how long a period previous to our observation this degree of nitrogen retention has been present.

Creatinin 3 to 4 mg. per 100 c.c.
6 lived 3 years (5 still living)
4 lived 4 years (3 still living)
1 lived 5 years
Creatinin 4 to 5 mg. per 100 c.c.
2 lived 3 years (1 still living)
Creatinin 5 to 6 mg. per 100 c.c.
1 lived 5 years and still living

Chart 9. The value of nitrogen retention in prognosis.

CAUSES OF DEATH

The causes of death are recorded for 69 of the 83 known dead. In 75 per cent the diagnosis of the cause of death was recorded by the author and in a small number confirmed by autopsy. In the remaining cases the information was obtained by follow-up letters.

		Number	*Per cent*
Cardiorenal vascular disease		26	38
Kidney disease	12		
Coronary disease	8		
Apoplexy	5		
Pulmonary embolus	1		
Infection		19	28
Pneumonia	6		
Septicemia (gangrene)	6		
Pulmonary tuberculosis	5		
Tuberculous meningitis	1		
Abscess of the lung	1		
Coma		7	10
Carcinoma		7	10
Gangrene		2	3
Accident		2	3
Progressive muscular atrophy		1	
Hypertrophy, prostate		1	

Chart 10. The causes of death recorded for 69 of the 83 known dead.

COMMENT

Many patients in the series have been able to reduce the amount of insulin required for good control, but it should be emphasized that the effect of insulin seemes greatest when its use is first instituted and that later on, if good control has been permitted to lapse for a period of time, the amount of insulin required to reestablish control is relatively greater, perhaps since the diabetes has developed a greater tendency to become progressive because of and during the period of poor control. Early cases least often require insulin and are most often able to dispense with its use.

Finally, the recent challenge of Joslin to the profession should be reiterated in any present publication on the subject of diabetes. Deaths from diabetic coma must be sharply reduced. It is the solemn duty of the medical profession to prevent deaths from diabetic coma. Coma is practically always preventable and nearly always curable.

SUMMARY

1. A series of three hundred cases of diabetes followed one to ten years is reported in this paper (two hundred additional cases are soon to be reported).

2. Follow-up information was obtained in 86 per cent of the series.

3. The incidence of diabetes among all patients at the Mason Clinic was 1.72 per cent, but among patients receiving general examinations was 3.44 per cent.

4. The number of males and females was practically equal.

5. The relative age incidence from the highest to the lowest according to age decades was as follows: fifth and sixth (practically equal), fourth, seventh, third, first, second and eighth.

6. There was an hereditary or familial history in 20 per cent.

7. The highest blood sugar on admission was 1500 mg. per 100 c.c. (died) and 1000 mg. per 100 c.c. (lived).

8. The total number of operations was fifty-two. Mortality was 3.8 per cent.

9. The number of cases of diabetic coma was two.

10. Cardiovascular-renal disease caused the greatest number of deaths, infection second, and coma third, the three together causing 82 per cent of the known deaths.

11. Arteriosclerosis was present in at least a demonstrable degree in 40 per cent of the cases and to a severe degree in 6 per cent.

12. Gallbladder disease was present in 15 per cent.

13. Sixty-four per cent of the males and 82 per cent of the females had been overweight when first examined. Overweight, therefore, seems more prevalent among females who develop diabetes. Also overweight seems to predispose to diabetes to a greater degree among females than among males.

14. In 55 per cent of the patients in the series the blood sugar taken fasting one year after being placed on management averaged 186 mg. per 100 c.c.

15. Forty-six per cent of the known living were five year and 12 per cent were ten year diabetics. Thirty-seven per cent of the known dead were five year and 20 per cent were ten year diabetics.

16. The total mortality was 27.6 per cent. This is higher than usually reported. The probable explanation of this is a relatively small series with a high percentage of follow-up statistics, and the duration of observation over a ten-year period.

MICROSCOPIC AND SEROLOGIC TESTS FOR SYPHILIS*

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Laboratory tests for syphilis fall into two fields, microscopic and serologic. With few exceptions microscopic tests are of value only in the primary stage of the disease, whereas serologic tests are of great diagnostic aid in the late primary, the secondary and tertiary stages.

Microscopic tests may be either of stained or living preparations. By far the most satisfactory is the living or "hanging drop" preparation. Indeed, it is only by this method that a diagnosis is possible the very first day of the disease. The discovery by Siedentopf and Zsigmondy of the principle of the ultramicroscope led to the discovery, in 1905, by Schaudinn and Hoffmann, of the treponema pallidum, the causative organism of syphilis.

The finding of the treponema pallidum is an absolute diagnosis of syphilis. The search for this organism, whenever this is practicable, should never be omitted. The ease with which the so-called "darkfield" examination may be made lends itself to office procedure. All suspicious lesions should be examined, and if the treponema be not found, be reexamined. Very frequently the patient presents himself with a lesion that he has had treated with various medicaments for from several days to several weeks. The treponema is easily susceptible to antiseptics and germicides, consequently a treated lesion may, on first examination, yield no treponema. Subsequent examinations, however, favor the finding of the organism, particularly if a warm normal saline dressing be applied several hours daily for a day or two before examination. Of thirty-eight patients examined in our laboratory, who had been under very intensive local treatment, and who were negative for T. pallidum at the first examination, five on subsequent examinations yielded the specific organism.

In our experience about five per cent of the patients examined by the darkfield method have had no treatment whatsoever before examination. Alas, in many cases the physician himself instituted treatment, and then became suspicious of lues when the lesion failed to heal. The ease with which the treponema can be demonstrated in untreated lesions should be a warning never to treat a lesion until at least two negative findings have been obtained.

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* Read before the Social Hygiene Institute, Portland, Ore., July 5, 1929.

The lesions in the serum, of which it is possible to find the organism of syphilis with reasonable ease, are: primary sores; enlarged glands adjoining primary sores; all papular lesions of the skin, including condylomata; and secondary lesions of the mouth and throat. The lesion under examination should be carefully freed from extraneous contamination by gently swabbing with normal warm saline or water, and then scraping lightly. The oozing serum is then transferred with a sterile loop to a slide, on which had been placed a loop of distilled water. Dilutions from this mixture may be made if too much blood is present. We have found a wax pencil ring made about the suspension to be as effective as a vaseline ring. The treponema in such a hanging drop preparation has remained viable for at least eight hours. A number one coverslip has given uniformly good results.

Search for the treponema in the hanging drop preparation should be thorough. In our laboratry at least three such preparations are examined, if the first slide be negative. Whenever possible, the microscope used for the darkfield examination should be used for no other purpose. Identification of the treponema pallidum should be made only by an experienced worker. In the examination of preparations from mouth lesions particular care must be used not to confuse the mouth spirochetes with the treponema pallidum.

At times, when the lesion itself yields no treponema, it may be advisable to puncture the enlarged gland. The secretion thus obtained will frequently show large numbers of the treponema.

DARKFIELD EXAMINATIONS 1924-1928

Total males examined	398
Number positive for T. pallidum	172
Per cent positive for T. pallidum	39.6
Total females examined	36
Number positive for T. pallidum	16
Per cent positive for T. pallidum	44.4

Table I

Table I indicates that in two out of every five persons examined the treponema could be demonstrated. Since no record was kept as to the character of the lesions, we are unable to state the number which actually were luetic. A fair percentage of persons who gave negative darkfield findings later gave serologic evidences of syphilis. It is well to emphasize the urgent necessity for repeated serologic tests, when darkfield examinations have proven negative.

Identification of the treponema pallidum in stained preparations should be made only by workers who have had considerable experience with the organism. Such preparations may be used as corroborative evidence of its presence. In our laboratory, if the smear from the suspected lesion be submitted and the organism found, a presumptive diagnosis of lues is made, leaving to the physician the task of making the final diagnosis. This he can make upon the appearance of the sore and, if necessary, upon the blood findings.

Where it may be impractical to send the patient to the laboratory, the serous exudate from the suspected lesion, collected and sealed in a capillary tube, may be sent. In one such preparation we found the treponema pallidum viable after eighteen hours transit through the mails.

SEROLOGIC TESTS

Since the finding of the specific organism is limited usually to the primary stage of syphilis, the importance of having a reliable laboratory test for all stages is at once apparent. Bordet and Gengou, in 1906, completed their studies on the phenomenon of complement fixation, and the adaptation of this test to syphilis was made soon thereafter by Wassermann, Neisser and Brucke. The Wassermann test has proven to be one of the greatest factors in the recognition and control of syphilis. It is not only a reliable diagnostic test, but it also, when used quantitatively, indicates the therapeutic progress of the patient.

The Wassermann test for syphilis differs from other complement fixation tests in that the antigen employed is nonspecific. Wassermann originally employed as an antigen an aqueous extract of syphlitic liver which contained large numbers of spirochetes and their end-products. This antigen, however, was found to be rather unsatisfactory, and led to the use of extracts of other tissues, both syphilitic and normal. Alcoholic extracts of normal heart muscle have for some time been used almost universally as antigens, not only in the Wassermann test but also in the various precipitation tests for syphilis.

The complexity of the Wassermann test and the difficulties inherent in complement-fixation tests led many workers to modify the test to a greater or lesser extent. For a time there were as many modifications of the original Wassermann technic as there were workers employing the test. In 1922 Kolmer and his coworkers made a thoroughly comprehensive study of the Wassermann reaction and devised a modification of the test which undoubtedly is superior to all complement fixation tests for syphilis.

The complexity of the Wassermann test led workers also to develop new tests for syphilis. In 1907 Michaelis used an aqueous extract of syphilitic liver as an antigen, and syphilitic serum as the antibody, and obtained a precipitate. In 1908 Jacobstahl, employing a diluted alcoholic liver extract, observed by means of the ultramicroscope the formation of floccules when it was mixed with syphilitic serum. Since then many workers devised precipitation tests, among which those of Meinicke, Sachs-Georgi, Dryer and Ward in Europe, and of Kahn in the United States stand out most prominently. The Kahn precipitation test, because of its high specificity and simplicity, has replaced, since January, 1929, the Wassermann test in the Oregon State Hygienic Laboratory as the routine serologic test for syphilis.

The Wassermann test requires five reagents: (1) the patient's serum; (2) the nonspecific antigen (alcoholic heart muscle extract); (3) complement (fresh guinea-pig serum); (4) hemolysin (immune rabbit serum); and (5) red blood cells (sheep or human). The Kahn test requires only two reagents: (1) the antigen (alcoholic heart-muscle extract); and (2) the patient's serum. The Kolmer test requises over-night incubation in the ice-box; the Kahn test may be completed within an hour, at the most, after the drawing of the patient's blood, or within a few minutes after the inactivation of the serum.

Medical literature has had many contributions on the Kahn precipitation tests. The writer reported comparative studies made on the Kahn and Wassermann tests in 1923[1] and 1924,[2] in both of which he concluded the Kahn to be the superior. A tremendously large number of comparisons between the Kahn and the Wassermann tests in many laboratories has shown very close agreement between the two, and an increasing number of workers have reported the superiority of the Kahn test not only over complement fixation tests, but also over other precipitation tests. The most outstanding comparison between the Kahn and all other tests was made in 1928, when the League of Nations Health Committee arranged a competitive conference at the State Serum Institute in Copenhagen.

"The Conference considered four requirements as basic for a desirable test for syphilis.

"1. Practicability. A test to be practical must be so constructed as to be performed with comparative ease. If the test is of such character as to require elaborate and complex technical details or apparatus, it obviously would not stand high in practicability.

"2. Sensitiveness. A test should be capable of detecting as many cases of syphilis as possible.

"3. Specificity. It should not "pick up" any false positive reactions, or only a very minimum number of them.

"4. Clear-cut reactions. It should give as small a number as possible of doubtful or plus-minus reactions.[3]"

The conference concluded that "the best of tests depending on precipitation may be regarded as equal in value to the best of tests depending on complement fixation." The Kahn test, besides being one of the five tests which were free from false positive reactions, "picked up" 305 positives against 208 positives given by the best of the Wassermann methods, of which seven were used at this conference. With one exception the Kahn method yielded more positives than any other precipitation test, eight of which were used at the Conference. The Muller test, which obtained 317 positive reactions, lacks in practicability because the antigen can be obtained only from one pharmaceutical house. A full discussion of the various methods employed as well as the results obtained may be found in the Report of Second Laboratory Conference on Serodiagnosis of Syphilis, Geneva, League of Nations Health Organization, 1928.

From October, 1923, to January, 1929, the Kahn test was used in our laboratory in conjunction with the Wassermann test. Many bloods that were submitted had just enough serum for one test; consequently a larger number of Wassermann than Kahn tests were made. In spite of that, the number of positive sera picked up by the Kahn test was considerably larger than that picked up by the Wassermann. This is shown in table II.

RESULTS OBTAINED WITH KAHN AND WASSERMANN TESTS 1924-1928

Total bloods on which Wassermann test was made, 21,310.
Total bloods on which both Kahn and Wassermann tests were made, 20,741.

	Wassermann Test	*Kahn Test*
Positive	2,900	3,408
Doubtful	1,533	1,605
Negative	16,877	15,728

Table II

Since January, 1929, the Kahn test alone has been used in our laboratory. For the first six months a total of 3382 sera was tested. Table III shows the comparative percentages of the results obtained with the Kahn test for this six month period as against those obtained with the Wassermann test for five years.

RESULTS IN PERCENTAGES, KAHN AND WASSERMANN TESTS

	Wassermann test (21,310 *sera*)						*Kahn test* (3382 *sera*)
	1924	1925	1926	1927	1928	*Mean*	1929 (6 *mos.*)
Positive	15.5	12.5	12.9	14.4	13.1	13.1	20.2
Doubtful	7.1	6.0	5.5	8.9	7.7	7.1	5.2
Negative	77.4	81.5	81.6	76.7	79.2	79.2	74.6

Table III

A study of table III indicates that the Kahn test has yielded more positive results than have been obtained in any year previously with the Wassermann test.

The Kahn test is being made on all spinal fluids received for serologic examination. While the technic is not so simple as for the blood sera (a preliminary precipitation of the globulin is necessary), it also yields excellent results. In table IV the results obtained with the Wassermann test in the five-year period on spinal fluids are compared with those obtained with the Kahn test for the six-month period.

RESULTS WITH SPINAL FLUIDS

	Wassermann test 1924–1929		*Kahn test* 1929 (6 *mos.*)	
	Number	*Per cent*	*Number*	*Per cent*
Positive	79	11.6	25	22.5
Doubtful	56	8.2	16	14.4
Negative	548	80.2	70	63.1

Table IV

Here, again, the superiority of the Kahn test is plainly evident. In a special competition held at London in July, 1928, with the Harrison-Wassermann method on tests with spinal fluids, Kahn was able to demonstrate the reliability of his test. Of 508 spinal fluids examined the Wassermann test gave a total of 177 + + and 63 + reactions, while the Kahn gave a total of 233 + + and 18 + reactions. Neither method gave false positive reactions.

The Kahn test performed in our laboratory is carried out according to the technic described by Kahn in his book, "The Kahn Test, A Practical Guide."[4] Two antigens, a standard and a special (very sensitive) are used. Every specimen, therefore, is checked at least once before final results are recorded. Since the antigen is the key-stone of both the Wassermann and precipitation methods, every lot of antigen is very carefully standardized. Uniformity of procedure is absolutely essential. We have checked a few of the Kahn results of one laboratory, where there was a rather marked disagreement with the Wassermann results, and found that the trouble was in the improper standardization of the Kahn antigen. Our own standard antigen always gave comparable, and at times stronger reactions than the Wassermann test.

The Kahn test should be carried out by serologists, hence it should not be the plaything of the office girl. It is true that it is a very simple laboratory procedure, but because of its simplicity it requires an alert mind and skilled hands to manipulate it.

We had some misgivings as to the reaction of the Oregon physicians to the substitution of the Kahn for the Wassermann test. We have not had a single complaint, and from the increasing number of specimens received one must conclude that they have taken the Kahn test strongly to their hearts. We run the Kahn test daily, hence reports are received by physicians from one to five days earlier than when the Wassermann test was run. We have done away with all laboratory animals previously employed in the Wassermann test, and have, therefore, reduced the cost of the serologic tests made by our laboratory.

SUMMARY

1. All suspicious lesions should be examined by the darkfield. Out of 434 persons examined, 188 or 43 per cent yielded the treponema pallidum.

2. Never treat a lesion until after two negative dark-field examinations have been obtained. Such negative microscopic findings must always be checked by serologic tests.

3. Since January, 1929, the Kahn test alone has been the routine test for syphilis in the Oregon State Hygienic laboratory. Based on our findings since 1924, in over 20,000 specimens tested (including sera and spinal fluids), the Kahn test has consistently "picked up" more positive reactions than the Wassermann.

4. The Kahn test should be performed only in laboratories equipped with proper apparatus and well-trained personnel.

State Hygienic Laboratory.

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THE PROGRESS OF SOCIAL HYGIENE IN WASHINGTON [*]

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Social hygiene has advanced much since the time of Moses, though the same frailties of human nature and plague of Baal Poer are still with us. After making a survey of present conditions in Washington, the conclusion is that our young people are above the U. S. average physically, intellectually, and morally, gossiping assertions to the contrary notwithstanding.

Opportunities for obtaining diversion in ways not conducive to the best of health are, of course, to be found but they are not flouted in the face. The saloon is not now open in a convenient place. A bootlegger must be found. The street walker has almost disappeared and the boy must hunt up the bawdy house. The inconvenience gives time to think, and with the present better education better judgment prevails. The auto, the radio and the lure of the great out-of-doors are three things that have materially aided in the raising of the health status of recreation.

Most of our children reach maturity about a year and a half sooner than in other parts of the country. Unmistakable evidence of this is found in girls beginning menstruation at twelve and thirteen instead of thirteen to fifteen. With a mature body and a mind lacking in experience, there is a greater tendency to moral lapse. There are perhaps more lapses in the school age than in years past, but only because so many pupils enter and a larger percentage of them finish high school than ever before. The sum total lapses in proportion to the number of pupils is low.

Venereal disease is a rarity in the public schools. The students, who have recently dropped out or have reached their limit of education and stay in school because forced to do so, discredit the whole.

WASHINGTON PIONEERED

Seattle in 1913 established the first municipal venereal clinic in the United States. In 1917 Seattle and Tacoma were the first cities to consider prostitution a health department and not a police problem, when they locked up their “part-time ladies” as disease carriers.

The present Seattle veneral clinic is recognized as nearest meeting the approval of four divergent interests: the sick one, wanting all he can get for nothing; the doctor, losing patients to the clinic; the health department, striving to reduce venereal disease; and the public, paying the bills. Only indigents and persons who are a distinct menace to the public health are given treatment in the public clinics.

In 1911 Seattle food handlers, both men and women, were first required to be examined by the health department for communicable diseases. Then it was primarily for typhoid fever and tuberculosis. Tacoma, Spokane, Vancouver, Yakima and Walla Walla now have this requirement. The Seattle examination included the Wassermann test and slides for gonorrhea. In Seattle taxi drivers and operators of other public conveyances are included in this requirement.

VENEREAL DISEASE INCIDENCE

Wassermann records were perused, where figures would be of value, to obtain accurate information regarding the prevalence of venereal disease. In general hospitals, running routine Wassermann reactions, the incidence of positives is approximately two per cent but the class too selective. The results of 18,388 Wassermann tests run in the State Department of Health laboratory during 1928 are shown in table 1.

	Number	*Per cent*	*One-fourth*
Total positive, more than one plus	3,271	17.8	4.5
Total negative	13,606	74.	
Total doubtful, one plus or ?	1,372	7.5	
Total unsatisfactory	139	.75	
Total run	18,388		

Table 1. Wassermann tests for 1928 in Washington State Department of Health laboratory.

Since an average of four tests per case for the year were made in positive cases, dividing the total percentages by four gives four and one-half per cent as an estimate of the amount of syphilis in a Washington doctor's practice. By segregating these into classes of society the results are shown in table 2.

	Neg.	*Pos.*	*Per cent*	*One-fourth*
A large industrial clinic	2,508	289	11.1	2.75
Monroe reformatory	386	169	43.8	11.
Walla Walla penitentiary	359	167	46.5	11.6
Medical Lake Custodial School	1,177	212	18.	4.5
Insane hospitals	325	91	28.	7.

Table 2. Group segregation of Washington Wassermanns.

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[*] Read before the Fortieth Annual Meeting of Washington State Medical Association, Yakima, Wash., Aug. 29-31, 1929.

[*] The Social Hygiene Committee of Washington State Medical Association, Drs. Minnie Burdon, L. H. Jacobsen, W. J. Stark, and W. L. Ross, Jr., did the educational work, furnished much data and assisted in putting this manuscript together. The author, as chairman, presented this paper in substance before the House of Delegates of the Washington State Medical Association, Yakima, August 30. For work done by the committee, see minutes of the House of Delegates.

A large private clinic series (table 2) drawn from over the whole western part of Washington is most valuable as a cross section of the laboring element. Its 2800 tests would suggest three per cent as the syphilitic incidence among persons employed in the various industries.

Syphilitic incidence for the two years past in Seattle food handlers is shown in table 3. The first file, recording 4042 examinations, showed an incidence of 5.9 per cent. The second and third files, recording 9,194 examinations, showed 3.8 per cent positive. Only reactions showing more than two plus are included, since all doubtfuls were repeated.

	Total examined	Neg.	Pos.	Per cent Pos.
First eight months	4,042	3,804	238	5.9
Following sixteen months	9,194	8,827	347	3.8
Totals	13,236	12,631	685	5.2

Table 3. Wassermann tests of all Seattle food handlers and drivers of public conveyances for past two years.

Persons with gonorrhea are not permitted to work at all and syphilitics, only if under treatment. This effort in Seattle reduced the syphilitic incidence in this class of people from approximately six to four per cent.

The incidence of gonorrhea is probably decreasing. Figures show that syphilis is. The early cases are being found and forced to receive treatment, at least enough to render them noninfectious.

VENEREAL DISEASE INCIDENCE IN PROSTITUTES

In table 4 the records of 752 women, charged by the Seattle police department with prostitution, show a venereal disease incidence of at least 46 per cent. No one knows how many showed no gonococci just at that time, nor how many syphilitics gave a weakly positive or negative reaction.

Disease	*Number*	*Per cent*
Chancroid	1	.13
Syphilis	132	17.6
Gonorrhea	173	23.
Gonorrhea and syphilis	43	5.7
Total No. disease	403	53.6
Total diseased	349	46.
Total examined	752	

Table 4. Seven hundred fifty-two prostitutes examined consecutively by the Seattle Health Department.

During the two weeks that the Pacific Battle Fleet was in the vicinity of Seattle, eighty fleet followers, girls imported from all over the coast, were examined by the quarantine department, results of which examinations are shown in table 5. Of these, fifty or 62.5 per cent were diseased. These being younger girls, mostly around nineteen, explains the greater frequency of gonorrhea than syphilis.

Disease	*Number*	*Per cent*
Gonorrhea	35	43.7
Syphilis	11	13.7
Gonorrhea and syphilis	4	5.
No. disease	30	37.5
Total diseased	50	62.5
Total examined	80	

Table 5. Disease incidence in 1929 fleet followers.

WHY PROSTITUTION

Everyone has something to sell, be it brains or lack of it. Some people's wants are far above their ability to provide. Herein lie the difficulties. The girl of mediocre ability, the same as the genius, sells that part of the body which will bring in the most money.

It is sometimes said that prostitution is a necessary evil to disseminate venereal disease and sterilize the inferior individuals. The intelligent person either avoids disease or is careful to continue treatment until fully recovered. He or she is little the worse for the experience. The unintelligent is sterilized. This may be involuntary birth control under divine guidance.

BROTHELS REFORMING

A condition found throughout the state is that bawdy houses, which were eliminated during the war, have returned. The vice industry for its own protection tries to eliminate disease carriers. Girls are no longer led astray. They break loose and run. The madames encourage girls to keep on the straight and narrow path; otherwise they become competitors. Competition is so keen that in some places sex perverts are used as business boosters.

The chain store system has invaded the brothel with the same methods and results as in other lines, cutting prices and catering to certain classes as sailors, loggers or the like. In all possible ways they stifle competition. Both customers and girls are given consideration. Girls are given regular working hours and good quarters with sanitary conveniences.

A new girl must first be examined before going to work, and old ones reexamined frequently for venereal disease. Big business, like the privilege of examining girls, is given to a physician by some previous arrangement. Flexible thoroughness of examination, cheapness and political expediency are all of importance.

Girls with a venereal disease are not permitted to work, neither are they turned out. They are sent to the public clinic or some private physician who is willing to take a chance on being paid for treatment. They always pay the doctor the first call, often the second and occasionally the third.

EDUCATION, PHYSICIANS

We need to begin at home by convincing the physicians that it is to the advantage of all concerned to report their venereal cases. The Washington law requires this, first by number; then, if the patient quits treatment before released, by name. The health officer's duty then is to return the patient to the physician or see that he gets treatment elsewhere.

We physicians should supply the demand for better treatment of venereal diseases, use more science and less sentiment, and cooperate with the health department in forcing the patients to continue treatment until well. Reporting venereal diseases may drive a few patients away, but unless we practice preventive medicine, we are in the class with the person who just sits around waiting for someone to have a mishap that we may profit by his misfortune, just as a vulture waits for the weary desert traveler to succumb.

The Washington law prohibits the giving of certificates as to freedom from venereal disease. In reality, doctors feel that a certificate is a recommendation for the girls. So long as the hotel clerk and bell hop and taxi driver and her "steady" recommend her so highly, the doctor's recommendation is superfluous. Health certificates in the hands of prostitutes are now passé.

In this state druggists are not legally permitted to diagnose, treat or even sell medicines as being recommended for venereal disease. Only an M.D. can legally do this. This law is rather unnecessary, though, since people no longer have the confidence in the clerk's superior knowledge, and the patient is unable to understand how a chiropractic posterior spinal punch will stop an anterior urethral leak. The doctor has a legal monopoly in treatment of venereal disease.

EDUCATIONAL, GENERAL

A lot of buckaboo relative to social hygiene and venereal disease has hitherto been broadcast by well-meaning but misinformed individuals who did not entirely confine themselves to truth. The distribution of social hygiene information belongs to the medical profession. The Social Hygiene Committee and the Public Health League cooperate to place physician speakers before any lay audience that is receptive. They even furnish speech material and illustrations. All lectures furnished are as a physician would give them and entirely without sentiment.

The venereal quarantine hospitals are rehabilitating many of the younger girls before they become hardened. They render noninfectious many who are undesirable as a doctor's private patients. Though they care for just a fraction of the total number of prostitutes in the vicinity, they do serve for the education of all. The girls inside learn the necessity of treatment, methods of same, and that if they are on the outside and not treating, they are more likely to get on the inside; that if arrested and found diseased but not under treatment they will be quarantined, and they do stay longer than if under previous medical care. A little education may induce those on the outside to be treated, not necessarily because of being interested in their own welfare but for business reasons.

Physiology of the sexual organs should be taught in the schools as a part of the physiology and zoology course, the same as in the botany class. The trouble is in securing suitable teachers who can give the same as pure science entirely devoid of sentiment. The zealots with their misdirected energy have completely soured educators on the subject.

EDUCATION, HOMES

A minimum of sexual instruction may well suffice for the person of high school education. The girl can be merely told to leave the genitourinary apparatus entirely alone, except for cleanliness; that if she has sexual relations, one of two things will eventually happen; she may be lucky a few times but the inevitable will come. She will either become pregnant or contract venereal disease, probably having both experiences.

With this impressed on the memory, the intelligent girl can be trusted so long as she stays sober. When drunk, no one can be trusted. This last is not limited to the younger generation.

The boy can be told about the same. If he has relations with a clean girl, she will likely become pregnant; if with the other kind, it is only a question of time until he becomes diseased. It is a game that cannot be beaten.

RESUME

An estimate from what we have learned would be that one and one-half or two per cent of the total Washington population is syphilitic; two and one-half or three per cent of the industrial workers are; ten to twelve per cent of the criminal element, as represented in the reformatory and penitentiary, are luetic. Five per cent of the feeble minded and seven to ten per cent of the adult insane have syphilis; seasoned prostitutes approximate twenty-five per cent syphilitic; the chippie, fleet follower, or dance hall girls run lower, perhaps twenty per cent, because of not having had time enough to acquire the infection.

Including gonorrhea, at least fifty per cent of the prostitutes are venereally infected and of the younger, those around twenty years old, perhaps seventy-five per cent are.

The syphilis figures are much lower than reported from other parts, and may be questioned because we only count positive bloods. We ourselves were surprised at the low syphilis incidence. Treatment may be responsible. Tabulations several years ago gave a much higher incidence. The decrease is in line with that shown all over the world but more marked.

CONCLUSIONS

The doctors should be the means of disseminating social hygiene information. Thus can the persons giving it be trusted as accurate, and not reflect discredit on the medical profession.

There is no need for additional legislation nor the exercising of police powers. It is a case of educating the people to cooperate with the various governmental agencies.

Commercialized vice is trying to eliminate disease for business reasons. Prostitution is no longer a police but a health department problem. The prostitute has risen from the mire. She wants to observe the laws of health insofar as her limited intelligence can comprehend and the exigencies of her business will permit.

Now it is to educate doctors and laity to cooperate in observing health laws. Social disease cases are being brought to light and persons infected are forced to receive treatment with a resulting great decrease in the incidence. Education is producing results.

Metallic Intra-ocular Foreign Bodies Not Demonstrable on Roentgenograms. In one of two cases reported on by N. M. Black and F. Herbert Haessler, Milwaukee (*Journal A. M. A.*, Oct. 5, 1929), in which an intra-ocular foreign body of iron was not demonstrable on an entirely satisfactory roentgenogram, the foreign body remained in the iris for a year. The mass of tissue that formed about it was diagnosed as a neoplasm since the Wassermann and tuberculin reactions were negative and because they assumed that foreign body had been reliably ruled out by the roentgen examination. A fragment of iron longer than 1 mm. was found in the piece of iris removed, and subsequently a wound of entrance through the cornea was demonstrable. In the other case a fresh intra-ocular fragment of iron lodged in the periphery of the lens.

THE RHEUMATIC SYNDROME IN CHILDREN

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Studies of the incidence of heart disease show variations in geographic distribution of rheumatic fever. This varies from 4.8 per cent down to as low as .2 per cent.[1] A survey, which is more or less preliminary, shows an incidence of only .1 per cent in the Pacific Northwest.[2] This immediately raises the question as to whether rheumatic fever, which is commonly a disease of childhood, is really rare in this locality or whether its manifestations are atypical. It has seemed to the authors, that it would be of importance to point out the broader conception of the rheumatic syndromes.[3,4,5,6]

Organic heart disease in children may be acquired or congenital. It is the acquired organic heart disease that is almost entirely caused by the rheumatic syndrome. According to Kerley[4] 90 per cent organic heart disease in childhood is rheumatic endocarditis.

In the broader sense the rheumatic syndrome has been enlarged to include frank rheumatic fever with its characteristic picture, tonsillitis, sinusitis, chorea, growing pains, the acute nephritis of childhood and, as Willius[3] has noted, even perhaps the exanthematous fevers. The first four mentioned have been for sometime considered as interrelated, and the triad of tonsils, teeth and heart has become well known. It is of a more recent date that growing pains have been considered as definite evidence of low grade infection of the same type. It has been stated that a normal child should never have aching legs, particularly those which are aggravated by cold, damp or wet weather.[4] Not infrequently this same child will show low grade temperature and a careful follow-up will reveal a developed carditis. These instances are too frequent to ignore and should place the physician on guard for continued and careful observation of children presenting this picture. Many advise immediate tonsillectomy, regardless of the appearance of the tonsils, careful study of the teeth for infection, sinus check-up and a careful search for any other focal infection.[4,6]

Many a restless child has been able to sleep with the help of salicylates and this brings up the importance of using them dogmatically in all of these children, even though scientific data at the present time are lacking. By some this remedy is used periodically until the child is twelve years of age, over which time careful observation has been continued.[4,6] Any active inflammation is greatly benefitted by rest. This rest in heart disease is best obtained when the child is kept in bed. Any child, who exhibits pyrexia with any of the above rheumatic manifestations, should be kept in bed and probably be given full doses of salicylates. The acute nephritis in childhood perhaps belongs to this same group.*

In conclusion the authors would like to point out:

1. The prevention of heart disease in childhood is closely associated with the rheumatic syndrome which includes rheumatic fever, tonsillitis, chorea, sinusitis, growing pains, exanthematous fevers and acute nephritis of childhood.

2. This perhaps will increase the incidence of rheumatic fever in this district.

3. Salicylates are clinically of definite value and should be used routinely.

4. Such children should be kept under careful observation until they are twelve years of age and their parents instructed as to the potential dangers.

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*"There is strong reason to suspect that acute nephritis in childhood is a rheumatic infection. The facts that by far the commonest of all causes of nephritis in childhood is scarlet fever; that the nephritis of scarlet fever is closely connected with postscarlatinal rheumatism; that there is no significant difference between postscarlatinal rheumatism and rheumatism which is not post scarlatinal, and the present fact that some 7 per cent of cases showing acute endocarditis eventually ending in chronic heart disease are at the time suffering from acute nephritis, go some way to prove the contention."5

VALUE OF NEPHROLYSIS AND NEPHROPEXY IN SELECTED PATIENTS. In 1,118 routine hospital urologic examinations conducted by Vincent J. O'Conor, Chicago (*Journal A. M. A.*, Oct. 12, 1929), to determine the possibility of upper urinary tract disease, the diagnosis of abnormal mobility of the kidney was recorded in sixty-seven patients; sixty-three of these were females and four were males. The clinical situation prompted advice for operative intervention in forty-one of these individuals. Thirty accepted operation, six are still under observation, and five did not return for further advice. Of the six still under care, four have had no relief from nonoperative therapy and two are partially improved after complete progressive dilation of the ureter. In these thirty patients, the right kidney was displaced in twenty-six and the left in one (definite trauma); there was bilateral displacement in three (one definitely traumatic in origin). Eighteen had infection of the affected kidney and fourteen of these had been previously treated by removal of foci of infection, renal lavage and ureteral dilation. In twenty-two patients ureteral dilation and conservative measures were carried out for periods of from six months to three years without permanent relief of pain or of urinary infection when present. Sixteen of these patients had been previously operated on for the complaint cited at the time they first came under his observation. In no instance had relief been obtained. In eleven the appendix had been removed; in three operation for fixation of the uterus had been done, and two had had gallbladder exploration without removal. Of the thirty patients operated on, abnormal periureteral or pelvic attachments were demonstrated in sixteen. In six there was a persistent lobulation of the kidney and in eight an anomalous or bipolar blood supply. In two instances there was a complete reduplication of the pelves and ureters. The surgical technic adopted in these cases combines complete ureterolysis and nephrolysis (freeing of kidney and ureter) and suspension or fixation. Symptomatically these patients classify their results as follows: completely well, twenty-one patients; greatly improved, six patients; somewhat improved, two patients; not improved, one patient. When asked whether they were glad they had had this operation, twenty-four patients replied in the affirmative, four "did not know" and two replied in the negative. O'Conor concludes that freeing of the kidney and ureter and suspension of the kidney (nephrolysis, ureterolysis and nephropexy) are efficient and justifiable when applied in carefully studied cases.

PROPER USE OF PHENOBARBITAL IN TREATMENT OF EPILEPSIES. The technic of the successful administration of phenobarbital is discussed by Roy R. Grinker, Chicago (*Journal A. M. A.*, Oct. 19, 1929). He says: definite dosages cannot arbitrarily be stated for any one patient since the "convulsive threshold" must vary enormously. Each patient is an individual therapeutic problem and must be treated by the method of trial and error over a period of time in order that the proper dosage should be given at the proper time. If the patient has only nocturnal seizures, the only dose necessary may be administered after the evening meal and except in the very young this should be started with 1½ grains. Similarly, when convulsions have regularly occurred only in the forenoon, the phenobarbital should be given after breakfast or, if necessary, also in the evening. When the spells have occurred only in the afternoon, the drug should be first given only at noon. This dosage may be successful in an individual having occasional spells at these definite times. When the spells occur more frequently and severely, the use of one dose of 1½ grains may not be enough. The phenobarbital should be first increased to 2 or 2½ grains (0.13 or 0.16 Gm.) at the single administration. Then if the "convulsive threshhold" is still low and spells break through, the drug should be given twice daily and, if necessary, after each meal, beginning with three-fourths grain (0.05 Gm.). With necessity the dosage should be gradually increased by one-fourth grain (0.016 Gm.) jumps to 2, 2½ or even 3 grains (0.13, 0.16 or 0.2 Gm.) three times daily. When convulsions occur irregularly at any time, phenobarbital should be started in three-fourths grain (0.05 Gm.) doses three times daily and increased with necessity to as high as 3 grains (0.2 Gm.) three times daily. For frequent appearing convulsions, for example several times weekly, the initial dosage should be 1½ grains (0.1 Gm.) three times daily. This applies to children as well as adults. The drug should be prescribed in powder form put up in capsules unless the dosage is exactly the amount of the commercially prepared tablets. Breaking the tablets into halves and fourths is rarely satisfactorily done by the patient. When other drugs are used simultaneously, such as cascara, they may be included in the capsules. Certain obstinate cases may not respond well to the powdered phenobarbital alone. Then extract of belladonna in one-tenth to one-fifth grain (0.006 to 0.012 Gm.) amounts or more may be experimentally included in the capsules.

NORTHWEST MEDICINE
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Devoted to the Interests of the Medical Profession of the Pacific Northwest

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EDITORIAL

ELIMINATION OF DEATHS FROM DIABETIC COMA

Before the discovery of insulin diabetic coma was almost universally a fatal malady. With the introduction of this drug the day of miracles seemed to have returned. A patient apparently in the grasp of death receives a life-saving administration of insulin and in an incredibly brief space of time he appears in his former customary condition. Widespread dissemination of knowledge concerning the prophylitic power of this drug among the laity should avert the onset of coma in practically all cases of diabetes. In the paper appearing in this issue by Palmer,* this fact is stressed and attention of the profession is called to the results obtainable by the timely administration of insulin in the presence of coma.

Data prepared under direction of the Massachusetts Department of Health indicate that this state has probably attained the most enviable record in reduction of diabetic mortality. During the present century it shows that deaths from diabetes under the age of twenty have almost disappeared in that state. Between the ages of twenty and forty-nine the mortality is lower than ever before recorded. On the other hand, there has been an increase above the age of fifty, for which women are chiefly responsible. This lower death rate has been due primarily to the reduction of coma, depending upon the skillful administration of insulin. A recent report by the Metropolitan Life Insurance Company shows over one thousand fatal cases of diabetes this year to the middle of April, of which coma was responsible for 41 per cent.

Attention is called to the fact that diabetes is a chronic disease, but doctors do not seem to realize that it has acute manifestations, the most appalling of which is the state of coma. This condition develops because of ignorance, negligence or carelessness. This may be exhibited in carelessness as to diet, negligence in the course of an acute infection or the careless stopping of insulin. It is stated that it should be impressed upon the mind of every diabetic when he feels ill to call his doctor, go to bed, take a hot drink every hour, take an enema, keep warm and get a nurse or someone to care for him. Thus men experienced in the treatment of diabetes appear almost ready to declare that no diabetic should develop coma, or if it be present, should die from this cause. Therefore, it appears that no physician should undertake the treatment of this disease unless he is thoroughly familiar with its various manifestations, the necessary diet to advise and above all is prepared to give his patient detailed instruction concerning the administration of insulin. It is claimed that the record existing in Massachusetts could be duplicated in every other state, if the medical profession were sufficiently keen in these particulars and the public at large properly educated through the efforts of medical men and women.

PROFESSIONAL MARTYRDOM

When a physician engaged in the daily duties of his profession is killed by an insane murderer, he is as truly a martyr to the science of medicine as is the martyrdom of the soldier slain on the battle field in the defense of his country. Such was the fate of Dr. Mitchell Langworthy of Spokane who was shot in his office last month by an insane Finnish laborer who was obsessed with the belief that he had been persecuted by physicians who had treated him. While Dr. Langworthy had not attended him professionally, he had been a member of an examining commission which had made recommendations to the State department of labor and industries relative to the settlement of a claim for damages sustained in an injury of some two years ago. Dr. Langworthy was at the height of his professional career, honored and respected by the whole medical profession of the state as well as the public at large. He was in the front rank as a surgeon, having attained a special distinction in orthopedic surgery, particularly in consequence of his genius in devising surgical instruments and orthopedic appliances. No man will be more missed among his wide medical acquaintance and a host of grateful patients.

This tragic experience cannot but impress on one the realization of the menace which may threaten any practitioner, especially one associated with patients so constituted that they may generate an attitude of imaginary persecution. While no physician had done an injustice to this insane murderer, who immediately committed suicide, yet he seemed possessed with the conviction that some medical man was responsible for his permanently disabled condition. Probably any one of the group with whom he had come in contact in recent time might as well have been the victim of his insane delusions. The list of medical deaths every year contain physicians who are killed under similar circumstances. Probably members of no other profession are confronted with such possible tragedies that may develop under unexpected conditions. Naturally the question arises how to prevent and avoid them. No rule of action can be suggested, but at the same time it might be wise to pay more attention to the threats and innuendos of those individuals whose remarks often represent delusions but may be excused as due to a malicious disposition. In the case under discussion it is reported that this demented individual had threatened he was going to get some doctor, but little attention was paid to his apparently boastful exclamations. As a profession we should be more on our guard for the development of such possibilities.

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* Page 513.

SALE OF CHRISTMAS SEALS

The value of local and national antituberculosis activities is known to every member of the medical profession and the bulk of the laity. Although the decreased mortality from tuberculosis is known in a general way, members of the medical profession are most keenly aware of tangible results along this line. This situation is due not only to medical attention and professional services, but also to the continuous labors of a large body of men and women, as a result of which funds are accumulated to carry on this work. The financing of the national antituberculosis campaign is unique in the line of public endeavors, in that funds are not solicited from individual contributors. Following the experience of many years duration, the national sale of Christmas seals has become an established national occurrence. Beginning about the middle of November these seals are exposed for sale in all cities and towns of our country. The revenue thus secured is almost sufficient to maintain the work of state and local associations during the ensuing year. This is the only form of charitable contribution which can be participated in by men, women and children with the expenditure of a comparatively small sum of money individually, the total of which produces a large amount to carry on successfully the work of these organizations.

MEETING OF AMERICAN COLLEGE OF SURGEONS

On Monday, October 14, the Nineteenth Annual Session of the Clinical Congress of the American College of Surgeons convened at the Stevens Hotel in Chicago. This commodious hostelry afforded ample space for all of the general meetings and special sessions. The organization and dispatch with which the Congress was conducted reflected great credit upon the surgeons of Chicago. A series of interesting programs, clinics and discussions were held during the week, ending with the Convocation and Granting of Fellowships in the grand ball room.

Throughout the meeting hospital standardization conferences were featured, these usually occurring during the morning sessions. The morning hours were chiefly devoted to numerous clinics, featuring various surgical specialties in the many hospitals in and about Chicago. The afternoon meetings were given to surgical film exhibitions on hernia, infections of the hand, acute appendicitis and the treatment of normal breech presentation. There were also films demonstrating the technic of gastrointestinal surgery. Several interesting clinical exhibitions were given by surgeons of national and international reputation.

The evening programs were devoted to the convening of the Congress, the Address of Welcome, by Herman L. Kretchmer, M.D., and the Address of the Retiring President, Franklin H. Martin, M.D. This was followed by the Inaugural Address by Surgeon General Marriotte W. Ireland of the Army, and the John B. Murphy Oration in Surgery was delivered by Professor D. P. D. Wilke of Edinburgh, Scotland. The remainder of the evening sessions were chiefly clinical with interesting symposia on pernicious anemia, ophthalmology and otolaryngology. The subject of fractures received a great deal of consideration and Dr. Charles L. Scudder delivered a special oration on the subject.

Malignancy was thoroughly discussed from all angles, including the influence of radium and roentgen ray. Bone sarcoma and the early recognition of cancer were also considered. A remarkably well organized technical exhibition was presented in the exhibition hall room of the hotel. The meeting adjourned with a registration well over 3000, including guests from foreign countries. Dr. Jeff C. Miller of New Orleans was selected as President and it was decided that the next meeting should be held in Philadelphia.

MEDICAL NOTES

OREGON

Health Survey Started. The health survey of Portland, which was recently authorized by public health officials and social welfare organizations, is now under way. Dr. Richard B. Dillehunt, dean of the University of Oregon Medical School, is chairman of the general committee. Drs. W. F. Walker and J. W. Wallace are acting as field director and assistant field director respectively, with the cooperation of over one hundred voluntary workers.

Among the activities and agencies to be investigated are vital statistics records, laboratory service, school health work, communicable diseases, sanitation, dental hygiene, mental hygiene, heart diseases, cancer and tuberculosis. At the conclusion of the survey an official report will be made to the American Public Health Association, which body is then expected to make recommendations regarding future public health activities in Portland.

Women's Auxiliary Meets. The women's auxiliary of the Multnomah County Medical Society held its first meeting at the Medical-Dental Building auditorium, Portland, Oct. 14. Election of officers resulted as follows: President, Mrs. Chas. H. Sears, reelected; first vice-president, Mrs. Raymond E. Watkins; second vice-president, Mrs. Karl H. Martzloff; treasurer, Mrs. C. D. Bodine; secretary, Mrs. M. A. Howard; editor, Mrs. J. Hunter Wells.

Hospital Opened. The new Southern Oregon General Hospital, at Roseburg, was officially opened early in October. The institution which occupies the upper floor of the Perkins Building, is completely equipped to handle surgical, medical and obstetric cases.

Acquitted on Narcotic Charge. Dr. A. A. Soule of Klamath Falls, who was recently arrested by officers of the narcotic division, was acquitted of the charge of illegally selling narcotics to an addict. A jury in the Federal district court of Judge Robert Bean at Medford rendered the verdict Oct. 10 after ten hours deliberation.

Dr. George C. Knott of Independence suffered a fractured arm Oct. 4, when his automobile skidded in gravel and overturned on the highway near Independence.

Dr. John H. Besson of Bend has returned to this country, following a year spent in postgraduate study in Europe. Part of this time was passed at Vienna, where he served as president of the American Medical Association.

Dr. Frank Leslie, formerly of Longview, has opened an office in Kelso.

Wedding. Dr. Lyle Kingery and Mrs. Marion Farrell Jacobs, both of Portland, were married at the house of the bride's parents late in October.

WASHINGTON

Hospital Plans Announced. The Seattle General Hospital, one of the pioneer institutions of the city, expects at some future date to move to a new site between Ninth and Terry Avenues, and Seneca and University Streets, according to plans made public Oct. 12 by Mr. E. Rex Smith, president of the hospital board. A new fifteen story building, costing $1,500,000, is to be erected. It will consist of four wings, radiating at right angles from one another, in order that every room may have ample light. A public campaign is to be held in Seattle Nov. 15-26 for the purpose of raising funds for the new institution.

Sanatorium Plans Disputed. The commissioners of Grays Harbor county found themselves during October in a peculiar position with regard to the $70,000 bond issue proposed to be used in the construction of an addition to the Oakhurst Tuberculosis Sanatorium at Elma. While receiving petitions from service clubs and citizens urging the immediate construction of the new building, they were in receipt of a communication from the board of managers of the sanatorium in which it was alleged that there is no need at present for the expenditure of so large a sum of money. Members of the hospital board also claimed that they had had no part in the campaign for the new addition.

Memorial Library Planned. In memory of Dr. Mitchell Langworthy of Spokane, whose tragic death last month was a severe shock to members of the profession and the laity, a library for use of patients at the Spokane Shrine Crippled Children's Hospital has been planned. The Spokane County Medical Society, the Rotary Club and many individuals of the community have already contributed generously to this cause.

Chelan Hospital Planned. The American Legion post at Chelan has announced as its chief objective for the coming year a campaign to raise funds for the erection of a modern hospital at Chelan. At present the nearest hospital facilities are at Wenatchee.

Newly Elected Fellows. At the annual meeting of American College of Surgeons at Chicago last month the following sixteen doctors of Washington were elected to fellowship: Minnie B. Burdon, William B. Cook, Dorrell G. Dickerson, Paul C. Gunby, Ernest E. Hemingway, Jackson K. Holloway, P. Clifton Irwin, Russell J. McCurdy, Irvin A. Weichbrodt and Hulett J. Wyckoff, Seattle; Kay England, Yakima; Albert E. Hills and Mullard T. Nelson, Tacoma; John P. Richardson, Ellensburg; I. R. Watkins, Aberdeen and Emil H. Welty, Spokane.

Pioneer Physician Honored. Dr. W. C. Cox of Everett, the dean of medical practitioners of Snohomish county, was the guest of honor at a banquet held by the Snohomish County Medical Society at the Hotel Monte Cristo Oct. 10. Dr. H. R. Secoy acted as toastmaster. After addresses by several colleagues of Dr. Cox, he was presented with a gift of traveling bags. He entered practice in Everett in 1892. He recently announced plans to retire and to move to California.

Dr. C. F. Eikenbary, of Seattle, spoke on "Fractures of the Elbow." Dr. W. C. Speidel, also of Seattle, discussed "Blood Transfusion."

Dr. Austin J. O'Leary, formerly chief of the neuropsychiatric department of the United States Veterans' Bureau at Seattle, has moved to Spokane, where he will engage in the private practice of his specialty.

Dr. W. M. Grieve, son of Dr. M. B. Grieve of Spokane, has returned to his native city, where he will specialize in orthopedic surgery. He has been associated with the orthopedic department of the University of Iowa Medical School for the past two years.

Dr. B. L. Phillips, formerly of Skykomish, has moved to Dayton, where he has purchased the practice of Dr. S. Tasjian.

Dr. John LeCocq of Seattle left recently for Spokane, where he will temporarily take charge of the work at the Spokane Shrine Crippled Children's Hospital, formerly conducted by Dr. Mitchell Langworthy.

Wedding. Dr. Samuel Morton Creswell of Tacoma was married to Miss Alice M. Snyder, Aug. 19.

OBITUARIES

Dr. Mitchell Langworthy, Spokane, Wash., died October 8 as the result of gunshot wounds inflicted by a demented patient the previous day. He was 38 years of age, being born in Tacoma. He was educated in the public schools of Dubuque and attended Coe College at Cedar Rapids. He graduated from the medical department of University of Iowa in 1916. He served as interne at the Home of Destitute and Crippled Children in Chicago. In 1917 he went overseas and was assigned to duty with the British at Old Mill general hospital in Aberdeen, Scotland. In the spring of 1918 he was sent to Vittel, France, and placed in charge of the orthopedic service in base hospital 23 with the rank of captain. In the spring of 1919 he returned to the United States and was assigned to general hospital at Fox Hills, Staten Island. In December of that year he located in Spokane, forming a partnership with Dr. C. F. Eikenbary, now a resident of Seattle. He was chief surgeon of the Shrine hospital for crippled children and was distinguished for his ability as an orthopedic surgeon. His life was a continuous contribution to humanity and its survival value is found in his many contributions to orthopedic surgery and the gratitude of hundreds of children whose lives have been blessed by his service. He had an unusual grasp of surgical mechanics and had many inventions to his credit. He was a most entertaining musician and had a host of friends both among physicians and laymen who unitedly lament his decease.

Dr. David H. Ransom, for the past eleven years assistant city health officer of Spokane, Wash., died suddenly at his home Oct. 4, aged 52 years. He was born in 1876, and graduated from the University of Buffalo School of Medicine, Buffalo, N. Y., in 1900. Previous to his appointment at Spokane he practiced for fifteen years at Clarkston.

Dr. Walter Caldwell Cox, Bellingham, Wash., died at his home Oct. 10, aged 61 years. He was born in 1868, and graduated from the Marion-Sims College of Medicine, St. Louis, Mo., in 1892. After practicing in Missouri for a short time he moved to Hartline, Wash., in 1902, where he remained until 1924 when he located in Bellingham.

Dr. Edwin E. Straw, Marshfield, Ore., died suddenly Oct. 14, aged 50 years. He was born in 1877, and graduated from Vanderbilt University School of Medicine, Nashville, Tenn., in 1898. He first located at Marshfield in 1901, and at one time served as mayor of that city. He also practiced at North Bend for a short time.

Dr. Phil J. Keizer, North Bend, Ore., died at the Good Samaritan Hospital at Portland Oct. 14, following an operation, aged 43 years. He was born in 1886 at Salem, Ore., and graduated from the University of Oregon Medical School, Portland, in 1914. Since that time he was associated in practice with his brother, Dr. Russell Keizer, at North Bend.

Dr. R. S. Shepherd, Seattle, Wash., died at the Northwestern hospital in that city Sept. 26, aged 68 years. He was born in Minnesota in 1861, and graduated from the University of Minnesota Medical School in 1900.

Dr. Charles Henry Russell, Pullman, Wash., died suddenly Sept. 13, aged 67 years. He was born in 1862 at Gratiot, Wis., and graduated from the College of Physicians and Surgeons, Keokuk, Iowa, in 1888. He settled in Pullman in 1902 and practiced continuously there until his death. At one time he served as city health officer.

REPORTS OF SOCIETY MEETINGS

OREGON

PORTLAND CITY AND COUNTY SOCIETY

Pres., E. G. McDaniel; Secty., E. W. St. Pierre

Portland City and County Medical Society held a regular meeting in the Medical-Dental auditorium, Portland, Oct. 2.

The "Diagnosis of Colitis" was the title of a paper read by Dr. J. H. Fitzgibbon. Dr. H. J. Sears discussed "The Parasitology of Colitis," and Dr. F. R. Menne gave a pathologic demonstration of the various forms of colitis.

WASHINGTON

CHELAN COUNTY MEDICAL SOCIETY

Pres., R. H. Finley; Secty., J. E. Gahringer

Chelan County Medical Society held a meeting at the Cascadian Hotel, Wenatchee, Oct. 2. Dr. Robert Finley of Wenatchee presided. An address on chest conditions with special reference to thorocoplasty was made by Dr. John Nelson of Seattle. Dr. Roger Anderson of Seattle discussed the treatment of fractures.

KING COUNTY MEDICAL SOCIETY

Pres., B. T. King; Secty., H. L. Goss

A general meeting of King County Medical Society was held in the auditorium of the Medical-Dental Building, Seattle, October 7, with President Brien T. King presiding.

Dr. H. E. Cleveland, of Burlington, newly elected president of the state association, was introduced. He spoke on the relations of the Public Health League to the state association. Dr. C. F. Engels, of Tacoma, president of the Pierce County Medical Society, was also introduced.

"Solitary Cyst of the Kidney." Dr. O. F. Lamson described a case with this condition. A man 66 years of age had a gradually developing tumor of the kidney until it filled the entire abdomen. While the left kidney function was normal, the right showed none in forty-five minutes. The pyelogram of the right kidney showed the pelvis pushed to the left about three inches beyond the midline. In attempting to remove the kidney it ruptured, loosing a large amount of its contents which was estimated at about eight or ten quarts. The patient made a satisfactory recovery.

Dr. Cefalu discussed the pathologic specimen, showing about one-third of the kidney attached to the cyst. It was not a papillary carcinoma with cyst formation as at first suspected. He commented on the absence of urinary findings, stating that too much emphasis has been placed on hematuria.

In discussion, Dr. A. B. Hepler said that these tumors are fairly common and occur in three to five per cent of all autopsies. They are defined as voluntary cysts, growing singly in a normal kidney but many are associated with smaller cysts. He mentioned the frequent association of malignancy in the solitary hemorrhagic cysts. Although excision is the treatment of choice in the simple serous cysts, nephrectomy is always indicated in the hemorrhagic cases.

A proposed amendment to the by-laws was read by Dr. Houston, which specifies an entrance fee of sixteen dollars, provided that it shall be ten dollars for members applying after August first. Annual dues for all members who have been in practice less than six or more than twenty-six years shall be sixteen dollars. The dues for all members who have been in practice for more than six and less than twenty-six years shall be twenty-five dollars. Annual dues for all members practising outside the corporate limits of the city of Seattle shall be ten dollars.

"Mechanics of the Colon." Dr. Wesley E. Gatewood, of Portland, read this paper. He described the motor dysfunction of the large bowel from various causes. He reviewed the evolution of the nervous and digestive systems as applied to the digestive tract. The studies of Alvarez and others during recent years were considered. He presented in detail the digestive functions through the small and large intestines. The causes of abnormal digestive processes were considered. Due attention was paid to constipation, its various causes and methods of relief. In discussion, Dr. Hagyard stated that the essayist had given a splendid resume of the physiologic and pathologic activities of the colon. He believed that chronic low grade inflammation is a factor in producing abnormal motor function. He recited a case to illustrate the relation of altered colonic function to paralytic illeus.

Drs. A. E. Lewis and C. E. Plumb were elected to membership in the society. The application of Dr. L. H. Edmunds was presented.

The medical section of King County Medical Society held a meeting in the Medical-Dental Building, Seattle, Oct. 14, Dr. George Miller presiding. The proposed amendment of the By-Laws concerning raising of the dues was read by Dr. Miller.

Dr. P. G. Flothow presented two cases of "Chronic Arthritis" from the county hospital, whom he had treated by lumbar sympathectomy. One was a man of forty-three with arthritis for twelve years, and the other a woman with the disease for fourteen years. Both presented deformed joints, much pain that had not yielded to many kinds of therapy. Both showed much improvement with mobility of joints increased, pain practically abolished, feet warm instead of cold. Section of sympathetic nerves dilates the arterioles of extremities due to relaxation of vasoconstrictor muscular fibers.

Dr. G. M. MacGregor, of Kent, read a paper on "Undulant Fever." He described a case who had suffered from this condition for two and one-half years. The chief symptoms are undulating waves of fever, weariness, pains in back and anorexia. Duration is from a few weeks to several years. Treatment is symptomatic, although cures have been claimed from intravenous administration of acriflavine.

Dr. Alfred Balle discussed his treatment of forty-eight cases of "Cerebrospinal Meningitis" at Diamond Point. Of the first twenty-two cases treated by lumbar puncture, there were eight deaths. In the second series of twenty-six cases, treated by cisternal puncture, there was only one death. The routine treatment was 30 c.c. of serum every twelve hours for five punctures, followed by 30 c.c. every twenty-four hours for three or four days. He warned against too frequent spinal fluid examinations during the postfebrile period, once every four or five days being advisable. The average number of cisternal punctures for a case was 8.9. The average amount of total spinal fluid removed was 281 c.c. The average amount of serum administered per case was 160 c.c. Cisternal puncture seems the best route for administration as it offers better distribution of serum to the localized pathology.

PIERCE COUNTY MEDICAL SOCIETY

Pres., C. F. Engels; Secy., W. B. Penney

The regular meeting of the Pierce County Medical Society was held in the Washington Building, Tacoma, October 8, Dr. C. F. Engels in the chair. Minutes of the three previous meetings read and approved.

PROGRAM

"Cinchona and the Nervous System," Dr. J. F. Griggs. This paper was a plea for consideration of an old-time remedy that has been almost eliminated from present day consideration. Dr. Griggs stressed its value in epidemic hiccough, whooping cough and the cough of measles. He also stated that it had proved of great value in certain cases of enuresis. The paper was discussed by Drs. C. Quevli, C. Quevli, Jr., Botts, Janes, Penney and Charles McCreery.

"Some General Points on Intestinal Surgery," Dr. M. T. Nelsen. The first part of this paper was a review of the late literature in regard to intestinal obstruction. The last part was a discussion of different points in surgical technic. The paper was discussed by Dr. F. S. Herrmann.

Resignation of Dr. J. W. Snoke, who has removed to Palo Alto, California, was read.

Report was made to the society of the shooting of Dr Langworthy, of Spokane. Dr. Janes moved that the society send flowers and a message of condolence. Motion was carried. Dr. Engels appointed the following committee: Drs. Janes, Brown and Ludwig.

Dr. H. W. Newell was unanimously elected a member of the society.

The following applications were read: Drs. F. L. Scheyer, G. N. Towers, A. S. Monzingo, Christen Quevli, Jr., H. T. Clay, N. D. Miller, W. A. Neithammer, C. B. Ritchie, K. Ito, James Egan, S. M. Creswell and E. W. Hanson. The transfer of Dr. C. W. Whitaker from King County Medical Society was accepted.

SNOHOMISH COUNTY MEDICAL SOCIETY

Pres., H. R. Secoy; Secty., A. B. Murphy

Snohomish County Medical Society held its monthly meeting in the Medical-Dental Building in Everett, Oct. 1.

A symposium on ophthalmology and otolaryngology was presented. Dr. A. B. Murphy read a paper on "Recent Progress in Bronchoscopy." Dr. C. H. Hoeffler discussed "Recent Progress in the Treatment of Sinus Disease." "Recent Progress in Treatment of Diseases of the Eye,, was considered by Dr. H. R. Secoy.

SKAGIT COUNTY MEDICAL SOCIETY

Pres., H. T. D'Arc; Secty., George Shockley

Skagit County Medical Society held a dinner and meeting at the Skagit County Country Club, Mt. Vernon, Sept. 13.

Dr. H. E. Cleveland, of Burlington, recently elected president of the Washington State Medical Association, gave a short talk on the future work of the state association.

SPOKANE COUNTY MEDICAL SOCIETY

Pres., Carroll Smith; Secty., R. M. Schulte

Spokane County Medical Society met in its new assembly rooms in the Paulsen Medical-Dental Building Spokane, Oct. 10.

Dr. L. L. Goodnow of Olympia, head of the medical division of the state industrial insurance department, was the principal speaker. Miss Helen Wilcox, of Seattle, secretary of the Washington Public Health League, spoke on "Health Work in the State." Dr. A. A. Mathews, of Spokane, described the "Injection Treatment of Varicose Veins."

WALLA WALLA VALLEY MEDICAL SOCIETY

Pres., J. T. Rooks; Secty., C. J. Johanneson

The regular monthly meeting of Walla Walla Valley Medical Society was held at Walla Walla, Oct. 9, 1929, at Marcus Whitman Hotel.

Dr. L. L. Goodnow of Aberdeen and Olympia, chief of medical division, Department of Labor and Industries, and Dr. Roger Anderson of Seattle, orthopedic surgeon, gave lectures before the society.

Dr. J. T. Rooks will be president during the coming year and Dr. C. J. Johanneson secretary, the society having reelected all of last year's officers.

A luncheon was served at 6 o'clock and was followed by a short business session, after which Dr. Anderson spoke on "Newer Methods of Treatment of Fractures." He placed emphasis on the use and abuse of some of the newer mechanical appliances in the treatment of fractures, referring in particular to the "open method of treatment."

Dr. Goodnow spoke on "Industrial Injuries and Treatment," laying stress on skull and spinal fractures. He emphasized early treatment and diagnosis, advising radical treatment when necessary. Both speakers urged the frequent use of the roentgen ray as an aid in the diagnosis.

A committee was appointed to draw up suitable resolution with reference to the death of the late Dr. Mitchell Langworthy of Spokane. The Walla Walla Medical Association was represented at the funeral by Drs. Elmer Hill, J. T. Rooks and C. J. Johanneson, together with Drs. Roger Anderson of Seattle and L. L. Goodnow of Olympia.

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BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

DISEASES OF THE BLOOD. By Paul W. Clough, M. D. Associate in Clinical Medicine, Johns Hopkins University. Cloth 310 pp. $2.50. Harper and Brothers. New York and London. 1929.

This is one of Harper's Medical Monographs, consisting of comparatively small volumes, a little larger than the "quiz compends," in flexible bindings and containing matter for the general practitioner presented in practical form. Thus far monographs on syphilis, angina pectoris and diabetes mellitus have appeared. The publications are under the supervision of an able board of editors, headed by Alvarez of Rochester. It is encouraging to find the old firm of Harper going into medical publication and this venture begins propitiously with the volumes already issued.

The present monograph is one distinctly needed in presenting, in simple form, the description of the blood followed by that of blood diseases. By blood diseases we mean more precisely diseases of the blood-making tissues, because blood itself is not a living tissue but a medium for the transportation of food, oxygen and waste products. First, the various forms of white and red cells are discussed, and their origin is described. Perhaps it is not commonly appreciated that in the adult, red cell formation is limited to the marrow of short bones, chiefly the ribs and vertebrae. The platelets, it is shown, are not real cells at all but fragments squeezed off the processes of the giant cells in the bone marrow. While destruction of the red cells occurs chiefly in the spleen, this process is taken over by the liver after splenectomy. The life of the red cell is about a month, of the neutrophilic leucocyte but three days, and of the lymphocyte even less than a day.

Leucocytosis and leucopenia are next touched upon and their relations to specific diseases are noted in detail. Then follow the remaining chapters in the book on the various anemias, leukemias, hemolytic jaundice, polycythemia, hemorrhagic diseases, transfusion and the technic of blood examinations. There are colored plates showing beautifully stained specimens of normal and pathologic blood cells.

The descriptions of the blood diseases, although necessarily abbreviated, are in most cases admirable, expecially that of pernicious anemia, and the author's triad of sore, red, smooth tongue; achylia; and numbness or tingling of the fingers, are pathognomonic of primary anemia even in the absence of characteristic blood findings. The incidence of diarrhea in 50 per cent of cases according to Cabot has not been born out in our experience. All details as to the liver treatment are given in extenso. Under Banti's disease the description is perhaps too brief, and the general present consensus of opinion that it is but a syndrome and not an entity is perhaps not sufficienty emphasized. Also, the statement that "death usually follows in about a year" is somewhat misleading, as the disease is "extraordinarily chronic, lasting often more than ten years" (Osler). This is noted also in the present volume, and the quotation above evidently refers to duration of the disease after the incidence of cirrhosis, ascites and jaundice. Splenomegaly is the earliest symptom, followed later by anemia, and initial symptoms may be vague and unclassified digestive symptoms.

It might be objected that the matter presented in this small volume may be found in the larger books on internal medicine. The advantage of these monographs is that they give in somewhat abbreviated and convenient form practical clinical descriptions of our latest and authentic knowledge of the subjects under consideration. WINSLOW.

VARICOSE VEINS. With Special Reference to the Injection Treatment. By H. O. McPheeters, M.D., F.A.C.S. Director of the Varicose Vein and Ulcer Clinic, Minneapolis General Hospital, etc. Illustrated with Half-tone and Line Engravings. 208 pp. $3.50. F. A. Davis Co., Philadelphia., 1929.

The author goes quite extensively into the anatomy and embryology, the etiology and diagnosis of the condition of varicose veins and very convincingly gives his proof by lipiodol injections of his positive statement that the flow of blood in true superficial varicose veins is always nil or reversed, and that, therefore, if proper technic be used, they may be obliterated successfully by the injection of sclerosing solutions with little or no risk to the patient. He enumerates the advantages of this treatment over former operative procedures which required hospitalization, absence from work, extensive scarring of limbs, higher morbidity and mortality and more frequent recurrence in after years.

He thoroughly explains his technic and reasons for same, with the various solutions used at present in this work. He advocates caution in their administration and outlines the dangers and how to avoid them. He gives directions as to care of patient following the injections and his very logical treatment of the complications of old and neglected cases, such as ulcers, eczemas, thrombophlebitis, etc. A very interesting chapter on pathology of varicose veins and pathologic changes following the injection treatment, written by an associate in the Minneapolis General Hospital, is incorporated in the book. This work is well illustrated and carries much preliminary information as to this novel and logical treatment of a most prevalent and distressing affliction. L. L. LONG.

THE TREATMENT OF DIABETES MELLITUS with Higher Carbohydrate Diets. A Textbook for Physicians and Patients by William David Sansum, M.S., M.D., F.A.C.P., Percival Allen Gray, Ph. D., M.D., and Ruth Bowden, B.C. Harper and Brothers, pp. 309. $2.50. New York and London. 1929.

The contribution of the higher carbohydrate diets in the management of diabetes mellitus is an outstanding work on the part of William David Sansum. It has taken considerable courage to pioneer in this manner, and those who were accustomed to work with a very low carbohydrate intake in the preinsulin period looked with concern upon his original suggestions in 1926. It would seem apparent from the excellent results he has reported that the patients on the higher were able to live a more normal existence than on the lower carbohydrate diets. The better mineral balance rendered possible by the higher carbohydrate diets puts the patient in a position to adjust chemical deficiencies, and so protect against harmful influences. How these advances are going to affect the status of the diabetic patient can only be shown by their clinical application and influence as expressed in basic glucose tolerance. If alkaline ash diets can reduce blood pressure in certain instances and protect the kidney from irritating influences and control arteriosclerotic changes, then their use should be more extensively employed.

Our training has been so intense with respect to a restricted intake in the management of diabetes mellitus that it is only natural to pause a moment at the opposite approach. Yet, when one thinks critically about the high carbohydrate diets, what can be said? First, that many times individuals who might be taught to maintain a good degree of health on, say 125 gram carbohydrate intake, would be encouraged to take a diet containing 250 grams of carbohydrate and insulin. Second, the greater the quantity of insulin used, the greater the financial burden upon the patient. Third, the higher carbohydrate diets do not teach the patient to be abstemious about the use of food. All phases of the application must be taken into consideration, and that method of management which means most to the patient in the form of physical and mental vigor employed. In this book one can find an excellent discussion in simple terms by a capable man. The dietetic formulae are all given. One naturally tends towards higher carbohydrate diets in their management of diabetes, and if one watches the accomplishments they are convinced of their marked advantages and benefit. The author is to be congratulated upon his excellent work and splendid presentation. HOFRICHTER.

A STUDY OF MASTURBATION AND THE PSYCHOSEXUAL LIFE. By John F. W. Meagher, M.D., F.A.C.P., Neurologist to St. Mary's Hospital, Brooklyn, etc. Second Edition, 130 pp. $2.00. William Wood and Co., New York, 1929.

The author states that his desire is to arouse in all guardians of youths a sincere interest in regard to psychosexual development. The first half of the volume describes sex knowledge and instruction, family influences on character, the sex instinct and psychosexual development. The latter half contains chapters on masturbation, causes, symptoms and sequelae, and treatment. Those reacting most severely to the habit of masturbation are, as a rule, intelligent youths of the highest moral type, while individuals of poorer moral fiber, as morons, commonly show few neurotic manifestations. Infantile masturbation is practically universal. It is the rule with boys and common in girls but is more common in women than in men. The harm resulting from excessive indulgence is chiefly in the mental and moral spheres rather than in the physical. As to causes, psychic factors are the most important, excessive masturbation being more often a symptom rather than the cause of the psychopathic state. The so-called dangers and sequelae of the habit given by ancient writers were exaggerations and often myths. Among adolescents some writers say the worry does more harm than the habit. The deleterious effects on character are especially to be noted. Abnormal selfconsciousness and inspection are most commonly observed. Fear is one of the commonest sequels, as of impending insanity. Every physician experienced in this line of practice can elaborate on these suggestions. In the matter of treatment emphasis is laid on sex enlightenment at the proper age. Where the traits and trends of the individual are predominantly good a cure is easiest. Sincere belief in religion is given as one helpful influence. The problem is often psychopathologic rather than medical or surgical.

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Asthma. Its Diagnosis and Treatment. By William S. Thomas, M.D., Associate Attending Physician in Immunology, St. Luke's Hospital, New York. Twenty Illustrations in black and white and six in color. 229 pp. $7.50. Paul B. Hoeber, Inc., New York, 1928.

The author states there is no book published by an American author devoted exclusively to the diagnosis and treatment of asthma. His aim is to make this book a practical guide to the management of asthmatic patients. He gives a brief description from some authorities respecting allergy in order to elucidate present day methods of treatment. He considers asthma in all its phases, including etiology, pathology, diagnosis and symptoms with technic of protein skin tests, a description of their reaction and interpretative desensitization and other features of modern methods of treatment. The book is well and attractively written. It is a very comprehensive work on the subject of asthma and will furnish the reader with the latest information regarding this distressing and common form of illness.

Ash.

Your Nose, Throat and Ears. Their Health and Care. By L. W. Oakes, M.D., and H. G. Merrill, M.D. 163 pp. D. Appleton & Company, New York and London, 1929.

The authors state that the great majority of physical defects in the human organism are located in the organs containing the special senses. Ignorance is responsible for most physical anguish. This little volume is intended to play its part in helping to relieve this ignorance on the part of the laity. The nose, throat and ear are each considered in separate chapters. The structure and function are first explained with reference to abnormalities and common forms of disease. No attempt is made to advise as to treatment but useful hints in prophylaxis are offered and an effort is made to impress upon the reader the existence of abnormal function which may be relieved by the skillful services of the physician. If the layman will carefully read a book of this sort, benefit will result both to himself and the medical man.

Minor Surgery. By Frederick B. Christopher, M.D., Associate in Surgery at Northwestern University Medical School, Chicago. With a Foreword by Allen B. Kanavel, M.D., Professor of Surgery, Northwestern University Medical School. Octavo of 694 pages with 465 illustrations. Philadelphia and London: W. B. Saunders Company, 1929. $8.00 net.

The author lays emphasis on definition, symptoms, treatment. The subject matter is well illustrated with frequent drawings and photographs. Roentgen ray evidence is abundant. It is interesting to note that the book is written in good English, is conversational and readable, taking up all minor procedures from piercing the ears for earrings to administration of hypodermoclysis. One is enticed on to reading further than he had at first intended in looking up a given subject. For this reason the work was given a rather searching scrutiny by the reviewer, who is glad to state that he is able to offer adverse criticism in one regard only. It is remarkable how the unsurgical and oft deplored haphazard method of dealing with ganglion by "striking smartly with a book" persists. This is essentially a book for the practical man; it is meaty and interesting, dealing as it does with the minor, though often puzzling, problems of practice. There is a niche, heretofore vacant, for it on every desk.

D. W. Johnson.

History of Hemostasis. By Samuel Clark Harvey, M.D. Professor of Surgery Yale University, Surgeon in Chief New Haven Hospital. With 19 illustrations. 128 pp. $1.50. Paul B. Hoeber, Inc. New York, 1929.

This book in its brief history of hemostasis from the most ancient days of surgery down to modern times gives numerous views of the eminent technicians as well as the technical advances that helped make surgery practical. It should prove of great interest to the laity as well as the practicing physician, stimulating them to further reading in medical history. Its illustrations are excellent and add to its value and interest. It is fittingly dedicated "to William H. Carmalt who in life has exemplified the best traditions of surgery" and whose death in July of this year a month after the puglication of this book terminated a life, whose span of 92 years saw much of the progress that brought surgery from semidarkness into its own.

Rawson.

Practical Materia Medica, an Introductory Test for the Study of Pharmacology and Therapeutics Designed for Students of Medicine by Clayton S. Smith, Ph.D., M.D., Professor of Physiological Chemistry and Pharmacology in the College of Medicine of the Ohio State University, Columbus, Ohio, and Helen Wikoff, Ph.D., Instructor in Physiological Chemistry and Pharmacology in the College of Medicine in the Ohio State University, Columbus, Ohio. 300 pp. $3.25. Lea & Febiger, Philadelphia, 1929.

The purpose of this book is to familiarize the medical student with the drugs he will use later in the practice of medicine. Inorganic drugs are first considered, followed by organic, adopting the usual arrangement of standard textbooks. The drug is briefly discussed, its various combinations presented and its use mentioned in practice and the diseases for which it is prescribed. Here one can find concisely presented the principles of materia medica and pharmacology which are the basis for medical practice.

Clinical Medicine for Nurses. By Paul H. Ringer, A.B., M.D. Formerly Chief of Medical Service of the Asheville Mission Hospital, Asheville, N. C. Illustrated. Third Edition, 330 pp., $3.00. F. A. Davis Company, Philadelphia, 1929.

The third edition of this book in ten years would indicate a demand for it. The writer states it is intended for nurses only, and as a background for teaching purposes. It especially emphasizes symptoms and their meaning, complications and their detection, as far as the nurse is concerned. Bacteriology, pathology and physical signs receive little attention. Treatment is considered only in a general manner. After dealing briefly with food, nutrition and immunology, chapters are devoted to individual diseases which a nurse will be called upon for technical care. Needed information is here available for anyone attending the sick. It can be recommended as a useful and instructive volume.

Complete External Biliary Fistula. In the two cases reported on by Owen H. Wangensteen, Minneapolis (*Journal A. M. A.*, Oct. 19, 1929), there was great loss in weight and deterioration in strength incident to the protracted external loss of bile. It is pointed out that man usually tolerates loss of bile to the exterior very well. In dogs, however, less omnivorous than man, complete external biliary fistula is compatible with continued good health only by careful regulation of the diet. In man, the external loss of bile may be the initial factor in a nutritional disorder that may prove serious.

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ORIGINAL CONTRIBUTIONS

INTRACRANIAL HEMORRHAGE*

DORRELL G. DICKERSON, M.D., F.A.C.S.
SEATTLE, WASH.

Not infrequently we are called to see a patient in coma and, inasmuch as vascular lesions of the brain constitute a fairly large proportion of the lesions encountered, it is convenient to have a general idea of the anatomic and pathologic conditions responsible for intracranial hemorrhage.

GENERAL CAUSES

Intracranial hemorrhage is often due to special pathologic conditions. These may be cerebral arteriosclerosis, involving the basilar arteries of the circle of Willis, aneurysms, hemorrhages into gliomata and intraventricular hemorrhages. Intracranial hemorrhage may occur in childhood during whooping cough from rupture of a cortical vein. It may also occur during a violent convulsive seizure and occasionally during coitus. This may produce a monoplegia, a hemiplegia or, if compression reaches a serious degree, death may result. Subarachnoid bleeding of unknown origin also occurs. Some types are due to apoplexy of the pial vessels, others to lues. Lues is not often a factor in the production of intracranial hemorrhage, due to the fact that this disease produces an endarteritis with occlusion of the vessels. We might also mention leukemia, hemophilia and the purpuras as causes of intracranial bleeding, especially following some trifling injury. Intracranial hemorrhage may also occur during the course of general paralysis of the insane. At times it is the first manifestation of the disease.

TRAUMATIC CEREBRAL HEMORRHAGE

Traumatic cerebral hemorrhage is always associated with a certain amount of violent jarring of the cranium and its contents, producing dislocation of the hemispheres and blood vessels. The symptomatology is, therefore, intimately associated with concussion, contusion and various degrees of compression. The symptoms are dependent upon whether the bleeding is without the dura, between dura and the arachnoid, subarachnoid, cortical or intracerebral. The symptomatology depends largely upon the amount and the rate of bleeding.[1]

EXTRADURAL HEMORRHAGE

Considering, first, extradural hemorrhage, this is usually but not always associated with a violent craniocerebral injury. General body burns will occasionally cause extradural bleeding. In traumatic cases the skull need not be fractured. Many times there is no visible injury to the scalp.[2]

The onset of symptoms, if the bleeding is arterial in origin, is fairly rapid. If the main stem of the middle meningeal artery is torn, then the hemorrhage will be profuse and the symptoms abrupt in onset, whereas if some terminal twig of the middle meningeal artery is lacerated, the hemorrhage may be small in distribution and slower in development, requiring perhaps several days before pressure signs become acute. Bleeding from the sphenoparietal sinus of Brechet is very common in this form of hemorrhage, and is perhaps responsible for hematomata more often than frank rupture of the middle meningeal artery. Extradural hemorrhages occur usually on the lateral aspect of the hemisphere in the temporosphenoidal region. They may also occur in the posterior fossa and a considerable extradural clot may form and press upon the cerebellum. The extravasation is lens-shaped and circumscribed. The accumulation of blood gradually strips the dura from the inner table and slowly compresses the brain.

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*Read before the Fortieth Annual Meeting of Washington State Medical Association, Yakima Wash., August 29-31, 1929.

Symptoms are, as a rule, clear cut. There is a history of a head injury, followed by a period of unconsciousness or so-called state of concussion. The patient rallies from this and may be free from symptoms for a number of hours or may have only slight headache. This is the so-called free interval. Masking of this latent interval may occur through a prolongation of the initial concussion, the two merging so that the patient passes from a state of concussion into coma. Ordinarily, however, there is a complete restoration of brain function following the period of concussion, and then there slowly develop drowsiness, stupor and finally coma.[3]

During this period there may be some vomiting. While this picture is developing, the pulse gradually slows. The blood pressure slowly climbs and, if we examine the optic discs in the early stages, there may be found slight edema with obscuration of the disc margins; later on, fullness and tortuosity of the veins with choking of the discs. During the early part of the stuporous state the patient can be aroused and will respond to questions, yet conversation is labored. His mental faculties are slowed up and when attention is removed he promptly sinks back into stupor.

The early focal symptoms are irritative and involve the face and arm, rarely the lower extremity. The clot, gravitating to the lower part of the Rolandic area, irritates or compresses only the face and arm center. Slight fibrillary twitchings about the facial muscles or jerking of the arm may be the only warning. If the lesion should be on the left side, some degree of motor aphasia will develop, if the patient is right handed. As the compression advances there is a definite paresis of the face and arm. Unless relieved, the condition progresses to the terminal stage of medullary compression with a rise in temperature, irregularity of pulse, change in respiratory rate and character, and the onset of Cheyne Stoke's respiration. This is the classical picture.

There are cases which show no evidence of a latent interval, present all the characteristics of concussion with no focal symptoms, and may even run a rapid, irregular pulse. These are the cases where the extravasation is rapid. Occasionally the hemorrhage is bilateral and it is well known that we may have contrecoup extradural hemorrhage. Free blood in the cerebrospinal fluid is not incompatible with a diagnosis of extradural hematoma as occasionally a tear may occur in the dura, allowing extradural blood to enter the subarachnoid spaces.

1. *Extradural hemorrhage due to rupture of stem of middle meningeal artery, early coma, no free interval.*

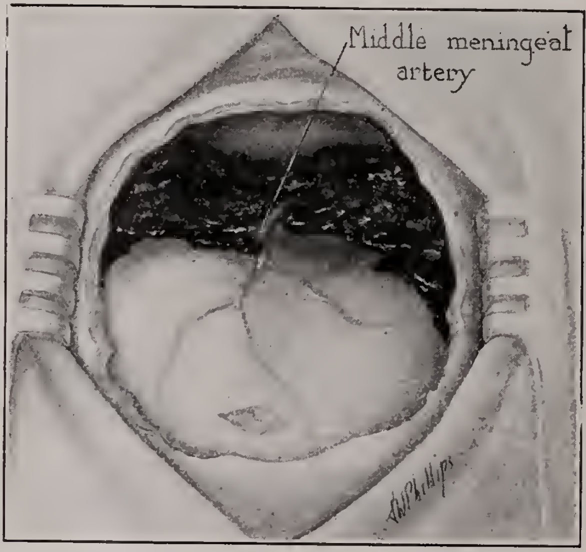


Fig. 1. Extradural hematoma, traumatic. Note rent in dura. No bleeding point found.

Case 1. P. B., age 19 years, messenger boy. On October 21, 1928 at 11 o'clock a.m. was struck by a motorist and thrown to the street, striking the left parietal region. Found dazed and confused. Was brought to the City Emergency Hospital and rapidly developed stupor, sinking into deep coma.

Neurologic. Except for bilateral fanning of the toes and a strong positive bilateral Chaddock with right sided weakness, no positive signs.

Roentgenogram showed linear fracture of the left temporal region.

A left sided exploratory subtemporal operation was performed at 1:30 p.m., October 21 at the City Emergency Hospital (Dr. D. G. Dickerson). A large extradural hematoma evacuated. The stem of the middle meningeal artery was torn and bleeding; this was ligated. Uneventful recovery (fig. 1).

2. *Extradural hemorrhage, venous in origin, slowly progressive and producing late pressure signs.*

Case 2. R. R., age 18 years. Postal Telegraph messenger boy. June 25, 1929 was knocked down by a motorist, striking the left side of his head on the pavement; slight concussion; was not unconscious. Came under observation in the City Emergency Hospital July 1, complaining of a swelling in the left parietotemporal region and dull headache.

Neurologic. Bilateral choked discs about three diopters, slightly more on the left side. Facial weakness right side, lower half; parital anomia; weakness of the right grip; bilateral Oppenheim and marked right Babinski.

Roentgenogram negative for fracture.

Lumbar puncture. 18 mm. Hg; clear. Pulse ranging from 60 to 42. July 2, 9 a.m. at the City Emergency Hospital (Dr. D. G. Dickerson), exploratory, left subtemporal trephine; evacuation of a large extradural clot. No bleeding point found. Uneventful recovery.

SUBDURAL HEMORRHAGE

Subdural bleeding is more frequent than the extradural form. It is an extremely common condition in fractures of the base of the skull, the bleeding originating where the dura is torn at the site of fracture. It is of the diffuse type and may extend over the brain stem and down into the vertebral canal. Occasionally the hemorrhage is circumscribed over one of the hemispheres.

The symptoms are those of acute intracranial pressure and follow the four stages of medullary compression. Occasionally there may be some localizing signs produced by a circumscribed hemorrhage. There is always an associated contusion and laceration of brain substance with subdural bleeding.

The symptomatology varies with the degree of bleeding. If it is profuse, there may be no symptoms whatever except unconsciousness, as the patient may die before other symptoms present themselves. In the cases with less bleeding we may have drowsiness, coma, convulsions and paralysis of the arms and legs; usually of the lower extremities and frequently the symptoms are bilateral. Bilateral pathologic reflexes, such as the Babinski and its associated signs, and absence of deep reflexes, are common findings. If the patient survives the initial shock and hemorrhage, he develops edema of the brain.

On opening the dura in these cases we find many scattered small hematomata, usually at the base in the middle fossa or there may be an extensive subdural hemorrhage covering the entire hemisphere. The lumbar puncture aids in the diagnosis. The cerebrospinal fluid may be blood tinged or clear. It is usually under a moderately increased pressure and the fluid may be scanty in amount due to ventricular collapse from compression.

Subdural hemorrhage secondary to depressed fracture over the torcular Herophili.

Case 3. D. G., age 49 years. While driving to work in the morning of October 19, 1928, fell asleep. His car was struck by a locomotive. He was thrown out about eighty feet, striking his head on the roadway. Was brought to the City Emergency Hospital in coma and profound shock. Profuse bleeding from a large irregular occipital laceration. Shock treatment given followed by application of tight dressings.

Roentgenogram showed a depressed circular fracture over torcular Herophili. Profuse bleeding continued, necessitating an emergency exploratory, performed at 5 o'clock the same afternoon (Dr. D. G. Dickerson). A large occipital flap was turned down with laceration in center, debridement of laceration; depression about the size of a silver dollar exactly over the sinus confluens with torn dura. Elevation of fracture, placement of muscle fragments over torn sinus, emissaries and torcular; opening of dura; evacuation of subdural hematoma. Uneventful recovery.

SUBARACHNOID HEMORRHAGE

Subarachnoid hemorrhage may vary from a mild symptomless condition, due to slight hemorrhage, to profound bleeding with early death. Craniocerebral injuries producing skull fracture or dislocation of the brain may rupture the small vessels in the piaarachnoid and it is within these spaces that bleeding occurs in subarachnoid hemorrhage. It is practically always present to some degree in craniocerebral injuries, especially where the cortex is lacerated or the base of the brain is contused. The brain has a bruised, beefy-red appearance and the arachnoidal spaces bulge with free blood.

In so-called concussion following craniocerebral injury with only transient loss of consciousness, we can in many instances, by performing a lumbar puncture, find free blood in the spinal fluid with slight increase in pressure. Such patients may suffer only transient headache and drowsiness. In the severe cases, where pure blood, unmixed with cerebrospinal fluid is obtained at lumbar puncture, profound coma usually occurs and, if the bleeding is continuous, medullary symptoms sooner or later develop. A lumbar puncture usually shows free blood in the cerebrospinal fluid but occasionally, due possibly to swelling or delay, the blood fails to reach the basilar cisterns and does not enter the spinal subarachnoid spaces. Clear cerebrospinal fluid being obtained at the time of the puncture may be misleading. This condition occurs with or without fracture of the skull. Indeed some cases may show no visible head injury with the exception of slight headache and a little slowing up of the mental processes and perhaps blood tinged cerebrospinal fluid. These patients may present no other abnormal findings.

Subarachnoid bleeding, sudden onset, following head injury; stupor and hemiplegia.

Case 4. R. G., age 38 years. Occupation, broker (seen in consultation with Dr. R. D. Forbes, at Swedish Hospital, Seattle, June 17, 1928).

While playing polo was thrown from his pony and kicked on the right side of his head; was conscious for a few moments, then lapsed into stupor; he became hemiplegic on the left side and vomited once.

General examination negative. Can be aroused; answers in a dazed, labored manner. Is unable to open his eyes. Eyes rotate upward and to the left. Is unable to look straight ahead. Flattening of the left side of the face, lower half. Head constantly turned to the right. Unable to move left leg or arm. Left abdominal reflex is absent; right is exaggerated. Absence of sensation in left plantar. Absent left patellar and tendon Achilles. A lumbar puncture was done in the prone position; pressure 10 mm. Hg.; fluid slightly blood tinged.

Roentgenogram of skull. Lateral stereo negative for fracture.

On reexamination had an area of swelling and tenderness in the right temporal region. Pulse slowed to 58–, stupor merging into coma. Conference held and an exploratory operation on the right advised.

Swedish Hospital, June 17, at 5 p.m. (Drs. D. G. Dickerson and R. D. Forbes), subtemporal decompression; trephine opening made and enlarged with rongeurs to size of half a dollar. Dura tense; opened and subarachnoid found to be filled with free blood. Arachnoid incised and drained. Wound closed with rubber band drain under dura.

Progress: The following morning the hemiplegia began to improve; gradual movement, first of the left leg. Conscious within forty-eight hours. Uneventful recovery.

CORTICAL HEMORRHAGE

Cortical hemorrhage occurs chiefly as a result of such injuries as stab wounds, bullet wounds and direct blows on the skull. It is frequently associated with lacerations of the brain substance and occurs in many cases of fracture of the base of the skull as a contrecoup effect. There are certain spontaneous cortical hemorrhages occurring during paroxysms of coughing or during convulsive seizures. Where death occurs in a convulsive seizure, we may find at autopsy a diffuse hemorrhage covering the hemisphere, due to rupture of one of the cortical veins. The symptoms, if the bleeding is localized and due to a local trauma of the cortex, for instance direct injury of local area of laceration, depend upon the area of the cortex involved. Should it be a silent area there may be no symptoms other than headaches and unconsciousness. If it involves the motor area, we may have Jacksonian seizures, due to early irritative effect of the clot followed by paralysis of the part when the pressure reaches sufficient degree. If the hemorrhage is over the occipital lobe, there may be a quadratic or homonymous hemianopsia. If it is localized in front of the Rolandic fissure, the symptoms may be those involving the face, arm or leg; one or all, or more being implicated.

INTRACEREBRAL HEMORRHAGE

Intracerebral bleeding is usually due to leakage from the lenticular striate artery, popularly known as apoplexy. It commonly occurs on the left side and in individuals who have atheromatous vessels; occasionally it is due to the late effects of syphilis in young adults (meningovascular form). The symptoms of the ordinary apoplexy are familiar to all, but there are cases where a differential diagnosis is difficult or well night impossible (fig. 2). Occasionally the differential diagnosis between cerebral thrombosis and hemorrhage may be exceedingly difficult.

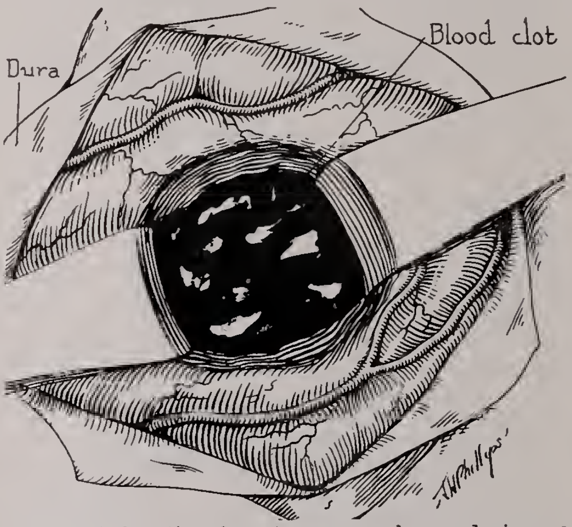


Fig. 2a. Subcortical hematoma, capsular, producing motor aphasia and hemiplegia, choked discs and marked intracranial pressure.

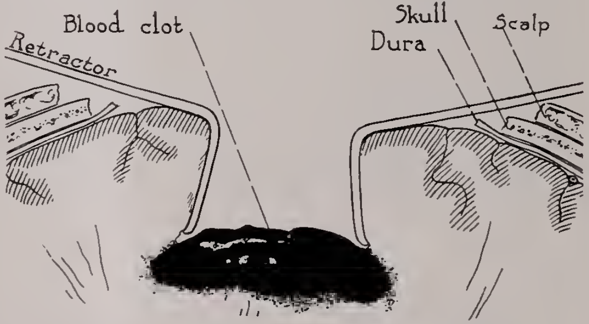


Fig. 2b. Transverse section of fig. 2a.

Bleeding within an intracranial neoplasm may occur at any age. Gliomatous tumors, particularly the spongioblastomas, are especially prone to hemorrhage, following a sudden rise in blood pressure due to excitement or violent effort. Sudden death may lead to the erroneous diagnosis of apoplexy. Young individuals presenting signs of sudden intracranial hemorrhage with no evidence of physical disease should be considered as possibly suffering from the effects of hemorrhage into a tumor or from a cerebral aneurysm. Should we obtain a history of headache or vomiting extending over a period of months, followed by sudden unconsciousness, then tumor should certainly be suspected (fig. 3).

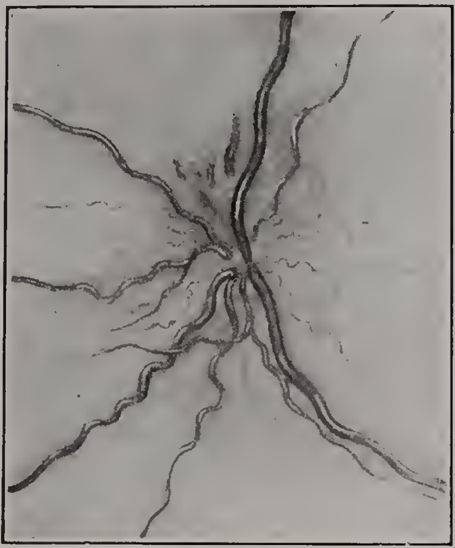


Fig. 3. Choked disc due to subcortical hematoma.

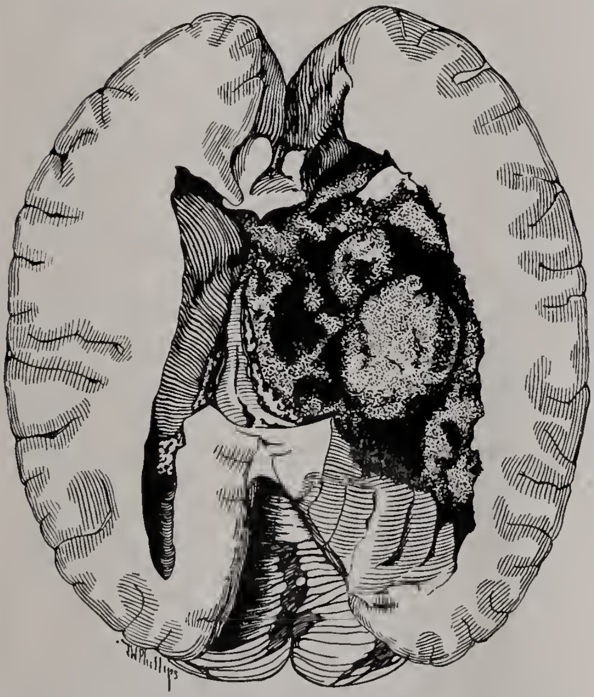


Fig. 4. Ventricular hemorrhage. Cerebral arteriosclerosis, sudden onset. Early exitus. Rigidity of extremities, cyanosis and deep coma.

INTRAVENTRICULAR HEMORRHAGE

Intraventricular hemorrhage occurs in arteriosclerotic individuals, in the luetic and in those suffering from brain tumor. It is brutal in onset. The patient passes into profound coma. Respiration and heart action are early embarrassed. Extremities are spastic and cyanosis is marked. Lumbar puncture reveals free blood in the cerebrospinal fluid (fig. 4).

CEREBRAL ANEURYSM

Aneurysm of the vessels of the cerebrum is not infrequent, yet to venture the diagnosis of aneurysm, prior to rupture, is certainly hazardous. We must consider such a lesion, when there are signs of intracranial tumor associated with cerebral arteriosclerosis or endocarditis. The existence of this lesion must always be given weight in the differential diagnosis of apoplexy, especially in a young patient or where a series of so-called apopletic attacks of comparatively sudden onset occur. Occasionally patients suffering from cerebral aneurysm find their way into the neurosurgical ward as brain tumor suspects. In a series of five thousand autopsies performed at Guy's Hospital in London fifty undiagnosed aneurysms of the circle of Willis were discovered.

The predisposing causes are cerebral arteriosclerosis, which occurs in about 65 per cent of the cases. Subacute bacterial endocarditis accounts for 15 per cent hypoplasia of the arteries and other causes take care of the remainder.[4] Most observers are of the opinion that syphilis plays only an insignificant part in the production of cerebral aneurysm. It occurs more frequently in men than in women and in most instances involves the middle cerebral or basilar artery. It occurs more often on the left side[5].

There are three groups of symptoms: first, neighborhood signs; second, signs of the disease causing the condition, namely arteriosclerosis and endocarditis; and, third, signs of leakage from the sac. In the first group we have paralysis of the oculomotor nerve, ptosis and hyperesthesia in the upper division of the trigeminal. The second group of symptoms are conditions causing aneurysm, namely cerebral arteriosclerosis, subacute bacterial endocarditis and hypoplasia of the cerebral vessels constituting the circle of Willis. In the last group the symptoms are those of meningeal irritation, due to leakage of blood from the sac. These are pain and stiffness of the neck, occipitofrontal headache, blood in the cerebrospinal fluid, elevation of temperature and leukocytosis. The roentgenogram may occasionally be of some value in making a diagnosis. Calcified plaques in the wall of the sac or erosion of the posterior clinoid processes may occasionally be picked up in the stereoscopic plates[6].

CHRONIC SUBDURAL HEMORRHAGE

Numerous articles dealing with chronic subdural hemorrhage have appeared in the literature since 1915. LeCount, Trotter and Putnam and others have from time to time called our attention to this condition. Patients suffering from chronic subdural hematoma in coma are occasionally diagnosed uremia. Another favorite diagnosis is deeply seated cerebral neoplasm. The latter is a pardonable error, as both conditions have points in common.

Chronic subdural hemorrhage is relatively infrequent, as only approximately twelve cases could be collected by the neurosurgeons of America up to 1925. Late subdural hemorrhage invariably follows a craniocerebral injury which at the time may pass unnoticed or it may be entirely forgotten. The injury is usually so slight that there is no visible bruising of the scalp.

A history of a smart blow on the forehead or occiput, or a glancing blow over the vertex is often obtained. Following a short period of concussion the patient promptly recovers from the immediate effects of the blow and may resume his former activities with no apparent disability. The direction of the force of the blow dislocates the cerebral hemispheres and this produces a tearing of the small veins entering the superior longitudinal sinus or its tributaries. At the point of entrance of the veins into the sinus their course is at right angles with this venous channel and the cerebral cortex, and any blow dislocating the movable hemispheres from the fixed and rigid longitudinal sinus may lacerate those small vessels. Chronic subdural bleeding is, therefore, always venous in origin and this in part accounts for the peculiar symptomatology[7].

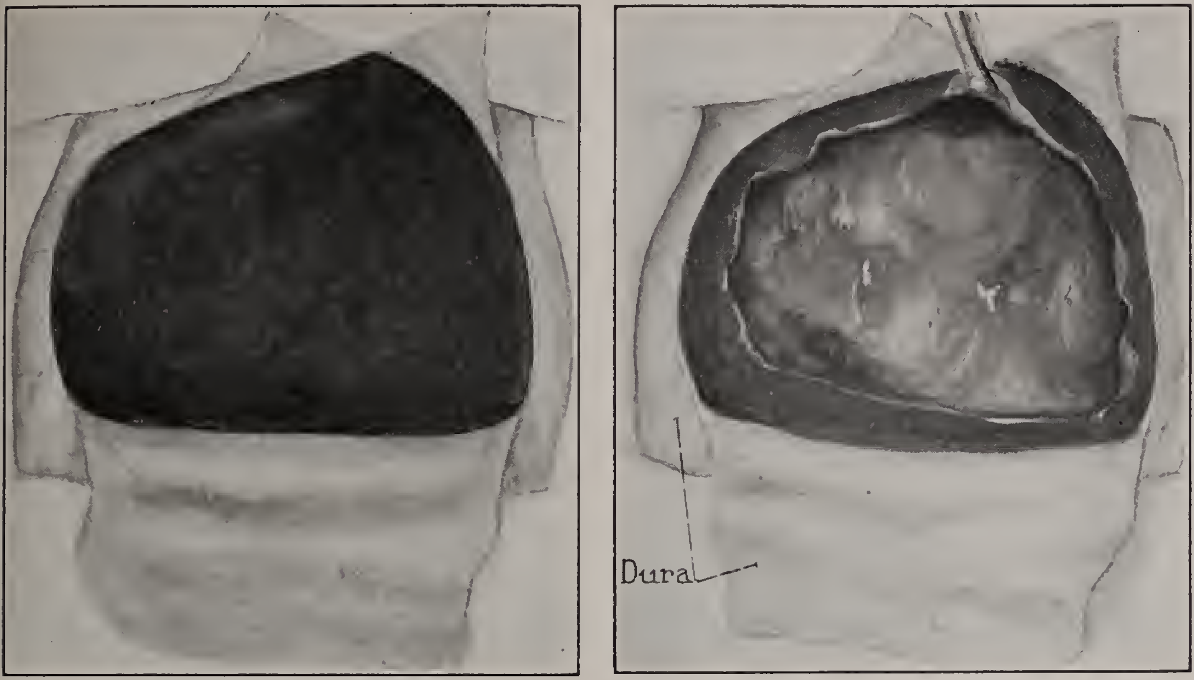
There is a gradual accumulation of venous blood under the dura, extending from the frontal to the parietal lobes and from the uppermost to the lower convolutions. Its thickness and extent will vary. In some instances the clot may be almost an inch in thickness. The encysted blood is entirely extra-arachnoidal and becomes promptly encysted in a definite membrane, the cells of which are derived from the arachnoid by migration. These are the large, flat, mesothelial cells, originally meningocytes. The hematoma is dark bluish or brownish with an outward peculiar greenish sheen. The capsule is rather firm, depending upon its age and may present some bleeding when incised, due to a rich vascular network. The center of the hematoma is liquified, and contains dark brownish, broken down clot or, if it is very old, the bile pigment disappears and leaves a lighter greenish or yellow substance[8].

Bleeding from the lacerated veins following a trauma is intermittent and slowly oozing in character and, depending upon the rate of hemorrhage, the time of the onset of symptoms will vary from several days to two weeks or more. The clot gradually increases in size and slowly compresses the hemisphere, dislocating the brain. Several weeks may elapse before the accumulation of blood reaches sufficient size to cause compressive symptoms. Headache is the first; it is usually severe and persistent. It may last a week or more at a time but, if patient goes to bed, this may subside. Usually, however, it persists. It gradually increases in severity and assumes the same characteristics as headache in intracranial tumor. Bouts of vomiting may accompany the headache, often precipitated by slight changes in posture.

With these complaints there are other changes often noted by the patient's relatives or friends. He becomes dull, his attention is blunted and absent mindedness is a frequent complaint. His memory defect is usually for recent events and slight personality changes are at times observed. Insomnia and neglect of the sphincters also occurs. The symptoms run a peculiar course, remissions and exacerbations being frequently observed.

Towards the end, a state of stupor appears, followed by coma. Even in this state these patients may pass alternately from coma to consciousness. This peculiar alternating coma and consciousness is almost characteristic of chronic subdural hematoma. During his conscious moments the patient's mind may appear quite normal and his responses are usually accurate.

Convulsive seizures may occur, especially toward the latter course of the illness[9]. Jacksonian attacks are practically never seen. Occurring with the symptomatology is a neurologic picture suggestive of a gross expanding cerebral lesion, at times strikingly similar to a deeply seated neoplasm, involving the capsule or basal ganglia. The hemorrhage, being distributed over the cerebral cortex from the upper to the lower central convolutions, gives a gradually increasing paresis to the face, arm and



a b

Fig. 5. Chronic subdural hematoma. (a) Dura reflected, showing a greenish plum-colored hemorrhagic mass with thickened neomembrane. (b) Membrane opened, the clot removed, showing thickened membrane overlying the cortex. A few cortical vessels show through.

leg. Rarely are single zones involved nor is there a total paralysis. Usually an extensor toe sign or some associated pathologic reflex will be discovered, and occasionally a bilateral Babinski is seen when the contrecoup pressure effects develop. The contralateral abdominal reflex is frequently absent.

With these findings is a slow pulse, increased blood pressure and increased cerebrospinal fluid pressure. The cerebrospinal fluid may be clear or slightly xanthrochromic. If, when the lumber puncture is performed, there is any question as to the side of the lesion, the insufflation of a small amount of air, followed by an anteroposterior encephalogram will decide this point for us.

The condition of the eyegrounds affords us important diagnostic evidence. Seen early, the discs may be normal or only a faint edema is present; later, a mild venous congestion, decrease in the depth of the cups and finally obscuration of the disc margins with total absence of the cups.

Chronic subdural hematoma. History of two minor head injuries and symptoms simulating subcortical cerebral neoplasm.

Case 5. J. McG., age 42 years, single, occupation logger. In 1925 patient was struck on the left side of head by a falling limb; sustained a scalp wound and concussion. Completely recovered and returned to work. On October 28, 1928, was struck by a speeder on a logging operation; thrown out and injured the right side of head. Taken to Olympia and treated by Dr. O'Leary for mild concussion. Roentgenograms were made but with negative results. One week following the injury he began to have slight headaches; these became progresisve and more severe from week to week. On December 15 he began to see double; vision began to fail, especially in the left eye. Has had two or three vomiting spells; developed persistent nausea.

Examination. A short, stocky individual. Blood pressure 130/65. Accentuated second aortic. Lungs normal. Pulse 80, regular and full. Neurologic. Double choked discs; two diopters on the left side, right just beginning. Small hemorrhages in the upper left quadrant of left fundus. Cranial nerves otherwise normal. All deep reflexes are exaggerated 2-plus but equal on the opposing sides. Abdominals absent on the right, feeble on the left. Fanning of toes on stroking right plantar with indefinite extensor toe sign. Abnormal associated movement on the right side, indicating slight motor weakness of the right leg. Mentality clear. Speech mechanism unaffected. Due to some confusion as to the location of the lesion, although subdural hematoma and deeply seated cerebral neoplasm were suspected, an indirect puncture with insufflation of air was carried out January 7, 1929. Pressure in the upright position was 50 mm. Hg. Fluid slightly xanthrochromic. Serology negative.

Interpretation of encephalograms. The anteroposterior showed displacement of both ventricles to the right; dilatation of the right and contraction of the left ventricle. The presence of an area of thinning over the left side near the parisagittal line with large dilated diploic vessels entering same suggested possibly meningioma.

Operation. Left exploratory craniotomy at Columbus Hospital, January 6 (Dr. George W. Swift). Osteoplastic bone flap. Dura tense, greenish and pigmented with brown spots. This was opened, revealing a dark bluish-green clot which was incised and evacuated. Uneventful recovery (fig. 5).

INTRACRANIAL HEMORRHAGE OF THE NEWBORN

This is a mooted question both as regards etiology and treatment. From an etiologic standpoint trauma, if it may be called such, is the precipitating factor. Too rapid delivery is just as much a factor in lacerating intracranial vessels as is retardation of the delivery by pressure against the head. Frank symptoms may be wanting. Convulsions, twitchings, cyanosis, failure to nurse and lassitude, are some of the oustanding symptoms[10].

Increased intracranial pressure manifested by tenseness of the fontanelles, rigidity and bloody cerebrospinal fluid confirm the diagnosis.

Intracranial hemorrhage of the newborn. Subarachnoid. Jacksonian convulsions.

Case 6. B. M., two weeks old (seen in consultation with Dr. C. L. Smith). Mother states that since birth, two weeks ago, baby has had twitchings and jerking of the left arm and turning of the head to the right; unconscious for a few moments. Has vomited several times; projectile in type. Birth noninstrumental; precipitate labor. Patient is a second child.

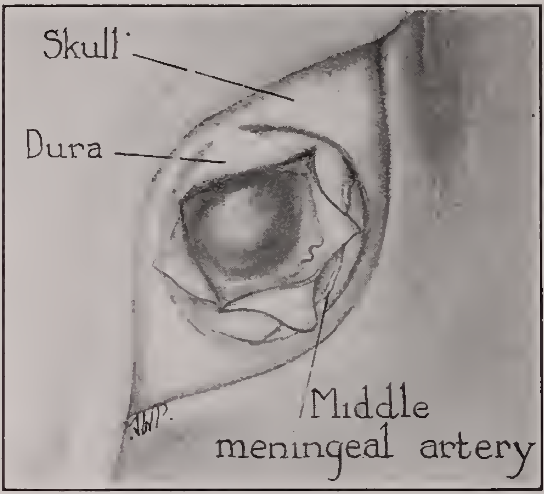


Fig. 6. Subarachnoid hemorrhage due to birth injury, producing Jacksonian convulsions involving arm and face. Note distended arachnoid.

Lumbar puncture has been performed several times. Pressure is always increased; fluid xanthrochromic and shows presence of crenated red cells.

Examination. A small infant, jaundiced; weak cry; fontanelles tense. Was seen in a convulsive attack; left arm rigid, stiffened out, and twitching and jerking of the member. Head turned sharply to the right and eyes rotated to the right. Attacks last about thirty seconds. Neurologic examination essentially negative except for slight retinal edema. Progressive attacks, increasing in severity and frequency; about thirty or forty a day.

Providence Hospital, April 9, 1929. Operation over right subtemporal region (Dr. D. G. Dickerson). Trephine under temporal muscle. Tense dura, bulging arachnoid which was filled with old blood. This was evacuated. Prompt improvement. Gradual lessening of attacks, none since April 18 (fig. 6).

TREATMENT

The treatment of intracranial hemorrhage depends largely upon the pathologic condition causing the hemorrhage. There are two main divisions, namely the general and the surgical. Practically all cases of intracranial hemorrhage are associated with some degree of shock. This is the first consideration in any form of therapy. General shock measures are in order, that is, applying added warmth to the body, the use of warm coffee enemas, the posture, use of camphorated oil intramuscularly and medullary support.

The routine elevation of the head of the bed in intracranial hemorrhage is to be frowned upon, as in some cases we only place added requirements on an already embarrassed medullary center and an overtaxed cardiac mechanism. Our experience has lead us to believe that the use of morphia is distinctly contraindicated in any form of intracranial hemorrhage. Morphia only adds to the embarrassment by a depression of the respiratory center. For restlessness and delirium, sodium luminal and codein with some form of restraint will usually suffice.

Lumbar puncture is at times a valuable therapeutic aid in subarachnoid hemorrhage with associated cerebral edema. Its routine use for all types of intracranial bleeding is certainly hazardous.

Treatment from a surgical standpoint is largely a question of individual judgment. Surgical procedures for subarachnoid or subdural hemorrhage will depend upon each case. There are certain cases of intracerebral hemorrhage associated with extravasations in the internal capsule of hemorrhagic infarcts from endocarditis which yield very well to surgical evacuation.

Intracerebral bleeding in the newborn should be treated promptly and vigorously. Early drainage of the subarachnoid spaces by repeated lumbar puncture and, if focal signs develop, an exploratory operation is indicated. The use of various coagulants and intramuscular injections of maternal blood are also indicated.

SUMMARY

Intracranial hemorrhage produces symptoms depending upon the degree and location of the bleeding. We know of several general pathologic conditions producing intracranial bleeding, namely, leukemia, hemophilia and the purpuras. Hemorrhage may occur in brain tumors from ruptured cerebral aneurysms and into the ventricles, the latter due to cerebral arteriosclerosis and intracranial tumor.

Traumatic cerebral bleeding produces different symptoms, depending on relation of the hemorrhage to the meninges and the brain. Extradural hemorrhage produces symptoms slowly or rapidly. Early symptoms are due to arterial hemorrhage and the classical picture of concussion, free interval, stupor, etc. occurs, accompanied by focal and general signs of increasing intracranial pressure. Delayed symptoms are due to venous bleeding and the picture is at times obscured. A slow pulse is not always present. Subdural hemorrhages are seen in fractures of the base of the skull and they produce mild or severe symptoms, depending on the amount of free blood in the basilar cisterns.

Subarachnoid bleeding may occur as the result of trifling head injuries. Focal signs are occasionally present. Cortical hemorrhage may occur as the result of direct injury, and the symptomatology varies from practically nothing to definite focal signs, depending upon the location of the bleeding.

Hemorrhage into gliomatous tumors may cause sudden death and is often mistaken for apoplexy. Ventricular hemorrhage has a clear cut picture, viz., brutal onset, coma and spasticity, accompanied by deep cyanosis.

Cerebral aneurysm is not as rare as formerly believed. The diagnosis before rupture is difficult. Sudden unconsciousness associated with subacute bacterial endocarditis or cerebral arteriosclerosis, third nerve palsy, rigid neck, leukocytosis and temperature rise, together with blood in the cerebrospinal fluid, are sufficient evidence upon which to diagnose rupture of a cerebral aneurysm. Chronic subdural hemorrhage is always traumatic in origin, producing a symptomatology almost pathognomonic, associated with neurologic signs of hemiparesis and increased intracranial pressure. Intracranial hemorrhage of the newborn can usually be recognized by definite symptoms, neurologic findings and bloody cerebrospinal fluid.

The treatment of intracranial hemorrhage is twofold; general for shock and surgical when indicated. The indications for surgical intervention are based largely upon individual judgment, increasing intracranial pressure, freedom from shock and focal neurologic evidence. Doubtful cases, with questionable traumatic history, are all entitled to exploration. A lumbar puncture is valuable as a therapeutic agent but hazardous as a routine measure in traumatic cases either diagnostically or therapeutically.

(Bibliography, omitted for lack of space, will appear in reprints.)

MOLES, PIGMENTED AND NONPIGMENTED, AND OTHER SKIN DEFECTS IN THE PRECANCEROUS STAGE

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In the past five years I have seen through the microscope more benign lesions of the skin than in the preceding five years, and since 1920 more than in the thirty years since I began the study of surgical pathology. The reading people of this country have understood the message of the medical profession best in regard to skin lesions, sore spots and white patches in the mouth and lumps in the breast. Sufficient emphasis has not been placed by the medical profession on lumps outside the breast.

No properly informed individual should die of cancer of the skin, at least if he or she has any confidence in the medical profession. The last malignant tumor of the skin that I examined was a huge fungous growth the size of a first that had been present three years. It was weeping, suppurating, smelling. The woman, over forty years of age, had observed a mole there for years; weeping and ulceration for three years. When her surgeon showed me the specimen which he had just removed, I remarked: "I have rarely seen such late cases of cancer of the skin in the past ten years. This woman could not have been correctly informed." He remarked with emphasis: "The woman understood perfectly the danger of her delay, but had no confidence in doctors."

In the records of the Surgical Pathological Laboratory of the Johns Hopkins Hospital it is very infrequently noted that the cause of delay was lack of confidence in the medical profession. The most commonly recorded factor is ignorance that the little skin nodule could possibly develop into cancer.

I remember distinctly one of the first cases. The old lady had a fungous tumor in the temporal fossa. It was like a mushroom. It resembled the pictures in the text-books on pathology previous to 1880. It was the type of cancer of the skin the older surgeons attacked with pastes, caustics and the cautery. This patient was quite intelligent. She told me that she had observed a little nodule in the skin three years, when it was no larger than a pea; it was covered with smooth epidermis; she could move it around with her finger, but the skin moved with it. There was no change for seven years. Then the skin became red. This was followed by weeping and a scab. Then the mass grew larger and larger. She was annoyed by the odor and difficulty of keeping it clean. After this conversation was over this woman, in 1895, said to me: "Doctor, is it ripe enough to be removed?"

It seems strange that the medical profession, including the dermatologic specialty, has been so slow in recognizing the fact that cancer of the skin never begins in a healthy spot, that there is always a definite lesion which can be seen or felt, small and circumscribed, easily completely removed with the knife under local anesthesia (we have had local anesthesia since 1890). The difficulty is that there are many lesions of the skin that can be left alone. If they are to become malignant there will be ample growth giving sufficient warning for their complete removal before cancer develops. Examples of this type of lesion are the subepidermal fibroma, the fibroma molluscum, the small subcutaneous nodule on a peripheral nerve, the angioma. In contrast to these benign lesions, which show little tendency to become malignant, is the pigmented mole.

A very large experience teaches me that all elevated pigmented moles, whether warty or not, should be excised, and all pigmented areas in situations where they are subjected to frequent trauma should be removed. The next dangerous type of skin lesion in old people is a scaly area, and it becomes more dangerous when there is scab formation.

I propose to give briefly here as clear a picture as I can of the skin lesions that should be removed. This is based upon a very large experience during a period of almost forty years, in which every excised area has been studied with the miroscope and the result noted from year to year. These writings represent what we are attempting to teach the students in the third and fourth year in the medical school, and postgraduates who come into the laboratory as students.

Our records seem to show that the best treatment for any skin lesion is excision with the knife under local anesthesia. With rare exceptions, the margin of healthy tissue can be sufficient to insure a permanent cure, even when the microscope reveals fully developed cancer. If the situation or size of a lesion makes a sufficient marginal approach a mutilating operation, then one can use the frozen section for control of the margin. The complete excision is more economical in time and material and from our studies more certain of a permanent cure than roentgen rays or radium. Now and then it is helpful to substitute the diathermy needle or the cautery for the knife. Radium and roentgen rays should be reserved for more extensive local lesions, usually of a recurrent type, where complete excision would be mutilating. But even here in many instances radical removal with the cautery, diathermy or coagulation, with and without radiation, has become the operation of choice.

We have learned from numerous observations on irritations of the nipple and scaly areas anywhere on the skin and on single and multiple keratoses of every type, that absolute and permanent healing of the little skin defect can be accomplished by repeated cleansing with warm water and soap, using cotton, followed by alcohol and then covering the area with vaseline or yellow oxide of mercury. If a skin lesion so treated does not heal within two weeks, it should be excised.

To be more specific, I will describe the different skin lesions briefly.

Irritation of the nipple, Paget's type. There is nothing more impressive of the effect of giving people correct information in regard to their health, the care of their bodies and the earlier recognition of diseases than the records in the Johns Hopkins Surgical Pathological Laboratory. In *Archives of Surgery,* March, 1924, vol. 8, page 461, I summarized thirty cases representing every type of Paget's disease, and called attention to the fact that in the early precancerous stage it is preventable; in the early malignant stage when confined to the nipple only, it is curable; and in the late stage, as described by Paget, hopeless in spite of complete radical surgery, radium and roentgen rays. One case is reported there which emphasizes the preventable benign lesion and the curable early malignant disease.

A woman, over seventy, presented herself with a warty area of keratosis on the right nipple and a superficial ulcer occupying the position of the left nipple. The patient had been aware of these little scales and scabs on her nipples for two years. She was innocent of their danger and gave them no special care. A year before she entered the clinic her left nipple was injured, and the scale was knocked off. The minute bruise or wound was not treated. Gradually the scab became larger, when suddenly the patient became aware that the nipple was gone. Fear brought her to the clinic.

The left breast was completely excised as for cancer. There was no evidence of cancer, except in the ulcer, and here the microscope pictured a very superficial carcinoma of the Paget type. The areas of keratosis and scab formation on the right nipple were treated twice daily with cleansing soap and warm water on cotton followed by alcohol. Then the nipple was covered with vaseline and a piece of gauze held in place by adhesive straps. There was complete healing in a month.

This patient died seven years later of flu-pneumonia, with no clinical or roentgen ray evidence of internal or external cancer. She had kept the right nipple clean, and there was no recurrence of the irritation.

In the five years since this paper was published we have not observed a single example of the hopeless stage of Paget's cancer of the nipple. In a few instances the resultant ulceration of the nipple was sufficiently advanced to indicate the complete operation for cancer without biopsy. In an increasing number of cases we could not make a clinical diagnosis of the irritation of the nipple, no matter what its type. In such instances the areola and the nipple were excised under procaine and a frozen section made. If Paget's carcinoma was discovered in the section, the complete operation for cancer of the breast followed. When the nipple lesion was benign, the wound was closed and the remainder of the breast saved.

In recent years the proportion of the benign lesions was on the increase. In the past year the largest group has not been subjected to operation at all. The irritation of the nipple has healed under the treatment already outlined. It is important for the medical profession as well as for the public to understand the significance and realize the value of such an observation.

It required years for the medical profession to learn the relation between an irritated or fissured nipple and an abscess of the breast, and then some more years to develop a technic of cleanliness which the nurse and mother could learn to carry out. We rarely see an abscess of the breast today. Among the women who come to the clinic with other lesions of the breast and who have nursed children, the instance, in the history, of an abscessed breast is approaching one per cent. In former years it was around twenty per cent. I frequently made this statement, that any irritation of the nipple in a woman not nursing a child may have the same relation to cancer as the irritation of the nipple has to mastitis, when the woman is nursing her baby. In Paget's disease of the nipple cancer develops in the nipple before the breast becomes involved, but it may metastasize to the axillary glands before the breast is infiltrated. Therefore, the prognosis for a cancer confined to the nipple only is the same as for cancer confined to the breast, and shows the importance of teaching women never to neglect any irritation of the nipple, whether they are nursing children or not.

Many cancers of the skin begin the same way in an area of irritation of a small zone of skin in any part of the body. This area may be covered with slight scales, or sufficient hornified debris to meet the description of keratosis. There may be weeping. Later there develops a distinct wart or an ulcer, and in these the deeper epithelial cells may break through the basement membrane, grow into the subepidermal tissue, change their morphology and function, and become cancer cells with that mysterious power of living and multiplying in any environment, and being carried with the blood or lymph stream throughout the body.

Many children are taught, whether they are boy or girl scouts or not, and many grown-ups understand the danger of a fresh cut which bleeds, or a blister which breaks. They understand, if they do not clean it and keep it clean, some blood poisoning organism may get in, give them trouble, or even take their lives. First aid to these little skin injuries is pretty well known. Mercurochrome has replaced iodine. But more important than either is the knowledge of the danger of a fresh cut, that it should be cleaned at once and protected with a clean piece of gauze and fixed with adhesive straps or a bandage.

But the lay people and many of the medical profession do not realize the danger lurking in an innocent area of irritation of the skin, no matter what its type. This danger is least on fingers and toes, greatest on the lower lip and tongue. The danger is increased when there is repeated trauma or excess of dirt, especially tar. The distinct relation between chronic irritation and dirt-like soot, was recorded years ago in chimney-sweep cancer, one of the first definitely reported occupational cancers.

Beautiful women who care for their skin never develop cancer, except where the never-slip eye glass irritates the skin over the bridge of the nose. Laborers whose occupation is so dirty that they must clean up after a day's work seldom get cancer of the face. This is shown best in miners, fireman and engineers. But in other occupations, like cab drivers, farmers, sailors, whose skin is constantly exposed to dust and some dirt, but not sufficiently so to make imperative this thorough cleansing, cancer appears more commonly.

In spite of hot and cold water in almost every home and bathing facilities, we all need instruction in regard to the toilet of keeping the skin clean, just as we need teaching of oral hygiene. As we grow older the danger of cancer increases and unfortunately vanity as to our appearance decreases. This may explain the fact the cancer of the skin of the face and hands is much more common in older men and older women. The technic of cleaning the skin is frequently by washing it with hot water and soap, to be followed by alcohol or some toilet water containing alcohol. Every skin defect or scar should be greased with vaseline or yellow oxide of mercury twice a day or oftener. No pimple or red spot should be neglected. It should be covered with a little cotton and collodion, and opened with a sterilized needle the moment the red top becomes yellow. Blackheads should be frequently removed, but without trauma.

It would be natural for the barbers to look after this technic of the care of the skin of the face. I have no evidence of any danger lurking in beauty parlors. In fact, the evidence indicates that the greater the vanity in regard to the appearance of the skin, the less the danger of cancer, with one exception, the vanity glass on the bridge of the nose.

Benign and malignant pigmented moles. I have two reprints before me on malignant pigmented moles, one written by a colleague in this country, the other in Europe. For practical purposes, when the mole reaches the malignant stage, it has become a hopeless disease. Among more than five hundred records at the laboratory, there are but three patients who have lived without signs of recurrence five years or more, and these three still survive without signs of recurrence. One had a mole on the leg, removed by my colleague Dr. Stewart at St. Agnes Hospital. Clinically it had just reached the stage of beginning malignancy. The thin epidermal cover, in some places, had been dstroyed by the growing mole cells, and the patient had observed slight weeping for a few weeks. It is the only single mole diagnosed malignant at the time of the operation that has survived.

All those diagnosed benign are living, all those placed in the malignant group five or more years ago are dead. The conclusion of malignancy in the other two cases was based upon metastasis in the axillary glands. When one finds melanin in axillary gland, malignancy is established, irrespective of the morphology of the cells in which it appears, but melanin in a mole does not necessarily indicate malignancy.

These two malignant moles with metastasis were operated upon by my friend Dr. Wainwright of Scranton, Pennsylvania, who has reported the cases. He attributes the cures to postoperative radiation. This radiation was done with a weak roentgen ray machine. In many recent cases, in spite of a heavy roentgen ray machine and a very large amount of radium, I know of no positive cure, nor even any definite relief in malignant moles dying of metastasis. Intravenous lead has also been tried without effect. Therefore, we must look upon the mole, when it has become malignant, as a hopeless disease.

Therefore, it is incumbent on the medical profession to so put the subject of skin defects before the public that they will report at once for examination. The medical profession must learn to recognize the types that should be removed at once. The skin defect which stands out most clearly for first choice as to immediate removal is the elevated pigmented mole, whether warty or not. It is dangerous to wait for growth or weeping. Malignancy in the cell of the mole with metastasis may have taken place before there is any sign of growth or the slight ulceration which gives rise to weeping.

I have gone over this group of malignant moles again and again. There are but few, less than two per cent, of malignancy in smooth, nonelevated pigmented areas. In these cases there always has been a history of injury or repeated irritation. In all of these patients who have succumbed to the malignancy in their moles, the mole has been present since birth or a number of years, and its elevation and size, if brought to the attention of a member of the medical profession, with any knowledge whatever of this potentially malignant tumor, should urge them to immediate removal before the stage of malignancy. Nothing more need be known or said, but this knowledge must be more widely disseminated to the general medical profession or the people.

The first paper in this country warning the profession and the public of dangerous tumors which could and should be removed in their innocent stage, was written by the dean and patriarch of our living great men today, Dr. W. W. Keen of Philadelphia. This paper and others which followed it brought to my attention a rather remarkable folklore or fear, that seems well established in the minds of some doctors, even surgeons and among the people. This was that, if you remove a black mole, it would recur in little black spots in and about the scar and later the patient would die, usually with a bronzed skin, a big mass in the region of the liver and a very dark urine. This is quite true, but when it occurs the original mole was not benign but malignant.

I could never get hold of an authentic case in which such a mole was examined by a pathologist who could make the differential diagnosis. In fact, I have never been able to get hold of any sections whatever. The explanation has already been given. The mole cell may become malignant before there is any change in the mole, or the change is so slight that patient or surgeon do not recognize and record the superficial ulceration or weeping. I am not including in this group the cases in which the mole has been incompletely removed. If the mole is malignant, it apparently makes very little difference. If the mole is benign and incompletely removed, of course, it will recur, but I have no actual cases with sections to prove that this trauma alone produces malignancy.

Other skin defects. I have discussed the two most important. One needs no illustration for the pigmented mole or the area of keratosis or scaly area. The other types, warts, nonpigmented moles, angioma, fibroma, dermoid cysts, adenoma of glands, subepidermal or subcutaneous nodules which may be of epithelial or connective-tissue origin, do not show the insidious tendencies of the pigmented mole and the area of irritation. Here the cell may become malignant with very little change in the visible skin defect. In the other skin tumors just mentioned, before the onset of malignancy or at least of malignancy with the danger of metastasis, the visible, palpable epidermal, subepidermal, or subcutaneous nodule or growth gets larger, with and without pain. Or the epidermis shows scaling or weeping. Everyone should know that is a dangerous signal. The patient should ask at once for an examination, and the doctor should act immediately and have the lesion properly removed with sufficient margin, so that if the section shows beginning malignancy, sufficient tissue has been removed for its cure.

Aseptic (Lymphocytic) Meningitis. The type of meningitis described, of which five cases are reported by Henry R. Viets and James W. Watts, Boston (*Journal A. M. A.*, Nov. 16, 1929), is characterized by an acute but relatively mild onset, with headache, vomiting and moderate fever. The disease is self-limited, lasting from three to six weeks. Recovery takes place without residual paralysis. The cerebrospinal fluid showed a marked lymphocytic pleocytosis, without polymophonuclear cells. The cells may reach 500 or more per cubic millimeter. Protein in the fluid is slightly increased, but the sugar and chloride content do not vary from the average range. The colloidal gold curve suggests meningitis. Tuberculous meningitis is usually suggested by the clinical appearance and the early cerebrospinal fluid reactions.

CANCER PREVENTION *

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"There is no subject in the field of medicine that is more important to all of us than that of cancer. It is a subject about which a great deal is known. I don't know any subject in medicine about which so much is known that is not made use of." With these words Dr. Howard Canning Taylor, president of the American Society for the Control of Cancer, opened the conference at Lake Mohonk in 1926.

Every year over one hundred thousand people die from cancer in the United States. One in every ten adults now living in the United States is destined to die of it. One in every five women who die between forty-five and sixty-five years of age dies of this disease. Cancer is a terrible plague. Sanitary and hygienic measures seem to have no effect on the mortality rate.

What do we know about cancer? We know a biopsy examination by a competent pathologist is the only way to decide whether a growth is malignant or benign. We know that the only hope of cure of cancer today lies in early diagnosis and complete removal. We know that in nearly every case a susceptibility inherited or acquired is present, plus some chronic irritating agent. We know that certain types of cancer are always fatal, no matter how early they are diagnosed, or how early treatment is instituted or what treatment is used. We know that each part of the body commonly attacked by cancer presents certain specific problems which must be studied individually, if we are to be able to control cancerous conditions of the body with the best success.

For example, we know that the use of tobacco, bad teeth and syphilis are prominent predisposing factors in oral cancer. We know cancer of the cervix is more common in child-bearing women and that neglected cervical lacerations and chronic endocervicitis predispose to this disease. We know that circumcision will decrease the incidence in the male. We know that a lump, a keratosis, an ulcer or a hemorrhage may be the first sign of cancer of the breast. We know that insignificant pain or tenderness, a slight limp or sudden fracture in a child may mean sarcoma of the bone.

We know that cancer of the stomach, colon and rectum requires fluoroscopy and roentgenographic plates, proctoscopic and rectal examinations, if an early diagnosis is to be made. We know that cancer of the duodenum is rare, that ulcer of the duodenum is common, that all large ulcers of the stomach should be immediately removed because a large percentage of them will show malignant changes, that small ulcers of the stomach should be watched closely and, if they do not respond rapidly to medical treatment, they also should be removed. We know that one out of four cancer deaths are due to cancer of the stomach. We know that through proper education of the profession and public cancer of the skin can be eliminated from the causes of mortality.

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* Read before Polk-Yamhill-Marion Medical Society, Salem, Ore., Sept. 3, 1929.

We know the ordinary surgeon can do more for an acute appendicitis before the appendix is ruptured than the most skillful surgeon in the world after this has occurred. Likewise, the ordinary family doctor, if informed and conscientious, can do more for cancer patients before metastasis than the cancer specialist after it is established. We know the value of removing infected teeth, tonsils, appendices, gallbladders and of draining infected sinuses to prevent heart, kidney and other diseases. Likewise, in cancer prevention is our hope.

Dr. Geo. H. Bigelow, commissioner of public health in Massachusetts, said, "we can prevent thirty per cent of the cancer deaths." How shall we prevent cancer? We can teach the public that pain is not usually a symptom until late in the disease if ever. We can educate the public to look out for lumps, hemorrhages and ulcers, to have moles removed, infected cervices repaired, troublesome stomachs radiographed, infected teeth removed; to practice simple living and care of the body with moderation in all things, to take a reasonable amount of muscular exercise every day; to give millions more for cancer research; to get behind the American Society for the Control of Cancer. We should form cancer clinics, establish cancer weeks and build cancer hospitals.

All this is fine, yet we can and should do more. With one act we can do more to prevent and cure cancer and every other disease to which the flesh is heir, than with all others combined. In fact, this is the only solid foundation upon which the structure of preventive medicine will stand. By establishing this one custom I dare say we can raise the life expectancy rate twenty-five per cent. This is no new idea. It is one which as medical men we are powerfully slow at putting over.

When insulin was discovered, the medical journals, medical societies and public press lauded the fact to the skies. When a treatment was brought out for pernicious anemia you could not pick up a paper, attend a medical meeting, or read a medical magazine without seeing or hearing the glad tidings. Yet how many articles can you point out in the medical magazines today, or how many medical papers have you heard, the purpose of which was to set forth the unfathomable value physically and financially a yearly health examination would be to the human race? Newspapers and general magazines are pushing this thing. Insurance companies are advocating it. As medical men we are asleep on the subject. Why? Probably because many of us do not know how to make and interpret health examinations. We could find out pretty easily by a little effort but we are so conservative, so self-satisfied with the old regime and so engrossed gathering in the almighty dollar that we look like a severe case of lethargic encephalitis in our attitude towards this golden opportunity that knocks at our doors.

Picture one hundred thousand people under medical observation from conception to the grave. Now look at a control one hundred thousand with medical attention only when absolutely necessary. If we believe in ourselves at all, if we feel our profession is the greatest on earth, as we should, then we can visualize only one result, a life expectancy of seventy-five years. Is that worth working for? That in itself will lower life insurance rates enough to pay for the apparent added expense of examinations. Are we men enough to accept this challenge? Can we swallow some of our individual pride and pull together towards such a noble goal?

You remember the parable of the talents. How the Master before going away to a far country, gave five talents to one servant, two to another servant, and one to third servant. How the first two used their talents and gained more, while the servant with the one talent dug in the ground and hid it. How when the Master came he took the one talent away from this servant and gave it to the others who had used theirs and gained more talents. Life is like that. Unless we use the facts and opportunities we have in the prevention of cancer we shall never gain more facts and opportunities to work with.

Insurance companies have already proven that it pays them in cold dollars and cents to have their policy holders examined each year. They have shown the mortality rate is decreased twenty-eight per cent by this method being carried out over a period of a few years. Think how much more the mortality would be decreased, if carried out from conception to the grave. Life extension institutes, insurance companies or any other organization are not the ones to make a success of the health examination. The family doctor alone can make it a successful reality. The cry today is for doctors to go out into the small towns. The yearly health examination habit once established will go a long ways towards solving this problem. If we believe in yearly health examinations, we should begin at home and have our families and ourselves examined every year.

With our present knowledge of cancer, can you tell me any better way to lower the cancer death rate than by yearly health examinations? Can you tell me any better way to study the basic principles underlying the true cause or causes of cancer? I am willing to predict that the clinical facts gleaned from yearly health examinations would in ten years help to such an extent that the cause or causes would be definitely established and other diseases mastered to an extent that will never be possible in our present hit and miss system. And best of all, when new medical facts are discovered and proven, it would not take ten to twenty years before they could be used to make human life longer and happier.

Robert Stevenson said, "There are men and classes of men that stand above the common herd, the soldier, the sailor, the shepherd not infrequently, the artist rarely, rarelier still the clergyman, the physician almost as a rule. He is the flower of our civilization and, when that stage of man is done with, only to be marvelled at in history, he will be thought to have shared but little in the defects of the period and to have most notably exhibited the virtues of the race. Generosity he has, such as is possible only to those who practice an art and never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and, what are more important, herculean cheerfulness and courage. So it is that he brings air and cheer into the sick room and often enough, though not so often as he desires, brings healing." Are we worthy of this beautiful eulogy?

In the past a well worked up case was considered to be one with a good history and a thorough physical examination, with the usual laboratory tests and with special tests as indicated. Tomorrow we shall demand a resume of yearly check-ups, dating from conception up to date, either from personal or other medical observation. The time is coming soon when a doctor who cannot diagnose and treat diseases in their early stages will be relegated to the rock pile.

In the *J. A. M. A.* of July, 1929, Drs. James Ewing, Robert B. Greenough and John C. A. Genster, in their report to the American Society for the Control of Cancer on the best methods of improving the service to the cancer patient, said, "the family physician is the key man in cancer control. On the family physician more than any other person except the patient himself dependence must be placed for prompt and proper action." In very conservative attire they are setting forth this same idea, that yearly health examinations by the properly informed family doctor is the only way for the medical profession to do their best for the cancer patient. They said, further, "yet it should be recognized the first definite treatment which a cancer patient receives usually determines the fate of that patient." We must give the family doctor the fundamental facts underlying the causes and treatment of cancer as we know them today. We must inculcate these facts into the embryo doctors in our medical schools, and we must teach the public the value of the yearly health examination.

Each of us must boost this great program by starting a series of health examinations. Here are a few suggestions for getting a series started and making this custom a reality.

1. Give all your prospective obstetric cases a health examination when they first come to you. In the months of close observation tell them its value and sell them the idea. Get them to promise to have their babies started on yearly health examinations.

2. Give all surgical cases a very thorough health examination before operation. In case of major operations give them one free health examination following operation. This will give us a chance to follow our cases better, show them we not only intend to get them well but wish to keep them well, and it will be the start they need in establishing this habit.

3. After any long or serious illness, as pneumonia, inflammatory rheumatism or influenza, when you have had an opportunity to follow your patients closely, have them come back when fully recovered and give them a free health examination,

collect your bill and sell them the health examination idea.

4. Use any ethical method which brings you in close contact with a patient as a means to launch him upon the yearly health examination schedule. We are all slaves to habit and this must be made a national habit.

In conclusion, I wish to say we know a lot about cancer most of which we are not using. The only hope for cancer control today lies in its prevention. We can decrease the cancer mortality rate by preventive measures. Societies for the control of cancer, cancer clinics, cancer hospitals, cancer weeks, research in cancer are all worthy attempts at its cure and control, but as a foundation for all these efforts we must establish a national habit, the yearly health examination, if we wish to do our utmost towards the cure and prevention of cancer.

Our program should be, first, to teach every physician how to make proper health examinations; second, to get each family doctor to start as many patients as possible on this examination schedule. The harvest we will reap in knowledge of diseases and increased life expectancy will far surpass our fondest dreams. When the yearly health examination becomes a reality, then new medical advances can be immediately passed on to the public to help make life longer and happier.

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CAUTERIZATION OF THE CERVIX*

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It is the purpose of this paper to discuss endocervicitis from the viewpoint of the general surgeon, based upon the observation of the results of treatment with the cautery in ninety-three cases during the past two years. Endocervicitis as a clinical entity was not recognized until bacteriologic studies demonstrated that the endometrium of the uterus is usually free from bacteria. Winter in 1888 made the first contribution, and seven years later Stroganoff and Menge, working independently, demonstrated that bacteria are not normally found above the external os. Curtis, in 1918 confirmed Winter's observations regarding the endometrium and demonstrated the susceptibility of the cervical glands to chronic infection.

Since the pioneer work of Billings and Rosenow establishing the possible dangers from chronic foci of infection, the need for eliminating chronic infection from the cervix uteri is gradually becoming appreciated. The experimental work of Moench should lead to increased efforts. She has demonstrated in Rosenow's laboratory at the Mayo Clinic that organisms, grown from the chronically infected cervical glands of women suffering from arthritis, will produce joint lesions in rabbits. Culturally these organisms are identical with the anaerobic streptococci commonly found in other foci of infection in patients suffering from arthritis. Her results from bacteriologic and experimental studies again suggest Sturmdorf's likening of the cervix to the tonsil and should definitely establish it as one of the important locations for foci of chronic infection.

Chronic endocervicitis is always due to the presence of bacteria, even though trauma, mechanical or chemical, has acted as a predisposing cause. The trauma may have resulted in one or more of many ways, such as lacerations from childbirth, irritation of a stem-pessary, dilatation and curetage, masturbation, attempts at abortion, strong chemicals in douches, etc. Kept free from bacteria, the trauma would heal rapidly in most cases, but the cervical mucosa with its racemose glands once invaded tends to harbor the bacteria and there results a chronic inflammation, involving first the glands and eventually the deeper structures, producing a chronic cervicitis as well as endocervicitis.

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Its importance depends on the virulence of the invading organisms and the associated pathology as well as the symptoms produced.

A speculum examination, which should always be made as an essential part of a careful pelvic examination, frequently reveals an endocervicitis with some degree of erosion in patients who report little or no trouble from leukorrhea. The history usually shows one or more of the following complaints, dysmenorrhea, sterility, pelvic pain, dyspareunia, back ache, menorrhagia or metrorrhagia, nervousness or debility. The endocervicitis must be treated in attempts to relieve sterility. Dyspareunia results from the tenderness due to secondary inflammation in the tissues along the lymphatics which drain the cervix. In subacute cases there is usually some thickening and tenderness of the uterosacral ligaments and frequently there is a perisalpingitis and perimetritis. Failure to diagnose and treat endocervicitis during pregnancy definitely increases the risk of puerperal sepsis.

That cancer of the cervix is more apt to develop in women with chronic cervicitis, and endocervicitis is generally accepted, though the factors which cause the malignant change are not understood. A differential diagnosis between early carcinoma and chronic endocervicitis may be impossible in the examining room. A microscopic examination of the involved tissue is indicated in all doubtful cases. Tissue may be removed with a nasal or tonsil punch and cauterized with a nasal type cautery.

In the treatment of infected cervices we have come to feel that unless begun early, within a few weeks after infection is planted, local applications are of little or no value. This is the method most commonly used by the general practitioner, and until recently also by the gynecologist, and is the least satisfactory of any method. It requires frequent office visits over a long period of time and usually results in practically no improvements.

The method of radium applications has been advocated by many gynecologists and has given excellent results in their hands. Curtis has reported eighty-seven cures in a series of one hundred and four patients. Although of great value, radium treatment of these conditions is not practical in the hands of men who treat most of the cervical erosions, on account of the expense and the dangers of its use in inexperienced hands. Furthermore, it is unnecessary, as the results obtained with it are due to the same action as those obtained with the cautery, viz., destruction of pathologic tissue.

That the operative treatment is no longer the method of choice may be seen by the statement of Howard Kelley, who says: "The one method of treatment is the actual cautery. With this process available, I but rarely operate any more for lacerations of the cervix." While the immediate results of surgical treatment are excellent, the end-results are far from ideal. In many cases the discharge continues, and in some cases follows, where there had been none before.

Heinebérge says: "The ease with which the cervix can be amputated has led to its removal without due consideration of your possible means of restoring it to a healthy condition." Trachelectomy may be done, when there is hypertrophy with extensive multiple lacerations, extensive infection and cystic change; but even here, amputation may sometimes be avoided for a more simple operation, if the cautery method is properly used a month or two before. If at all possible, trachelectomy should be avoided during the childbearing period, as it predisposes to abortion and dystocia.

Mugit says that tracelorrhaphy did not relieve endocervicitis with its discharge; that amputation was followed in four-fifths of his cases by sterility and that one-half of the remainder failed to carry to term, and those who did suffered severe cervical dystocia. Abortions and premature labors followed in 55 per cent of pregnancies after amputation. Seventy per cent of these patients had difficult labors. Leukorrhea was relieved in nearly 60 per cent, partially relieved in 33 per cent, and unchanged in 7 per cent. It was made worse in 1 per cent. In cases in which there was no leukorrhea before operation, there was discharge in 9 per cent after both trachelorrhaphy and amputation.

Dickinson calls attention to the fact that, while there must be careful adaptation of any particular operative measure to any particular cervix, many of the operative measures may be dispensed with by means of the proper use of the cautery. He says: "In a number of cases, where the patient has been obliged to postpone operation for a major condition of the cervix, and this palliative treatment was used to relieve symptoms, I found operation in the end unneeded, because the healing was enduring and the inroll sufficient. Furthermore, any measure that will obviate office treatment and alleviate the pelvic obsession of the chronic office habitue is to be welcomed."

This state of affairs, therefore, calls for a method of treatment that is, first, prophylactic or a "between childbirth" plan of management; and, second, a procedure that may in practically every condition be substituted for the more radical operative methods. The electric cautery seems at present to fulfill the requirements of such a method.

The more or less superficially infected, eroded cervix or the recently lacerated, everted cervix so commonly seen from ten to twenty weeks postpartum, can be healed and "rolled in" by the judicious use of the small nasal type cautery within from four to eight weeks. The small spatula-shaped tip is employed, and three, four or five or more linear incisions are made over the eroded or everted areas, spaced from 0.5 to 1 cm. apart, from 3 to 6 mm. deep and extending well into the canal. One "striping" is usually sufficient. In only two cases of this series has a second cauterization become necessary and these were both cervices of extreme hypertrophy and gland infection. The hypertrophied infected mucous membrane of the cervical canal must be included in this procedure; otherwise the leukorrheal discharge will not be relieved.

On the other hand, care must be exercised lest all the mucous membrane near the external os be destroyed. Nabothian cysts over the outer rim of the cervical lips, that have not been punctured thus far by the cautery, should be pierced and their contents evacuated. The procedure is usually painless and with one exception all the cases of this series have been done in the office. The one exception was done at the hospital coincident with a perineorrhaphy for rectocele, for which ether was necessary. It was obviously impossible in this case to follow up with aftertreatments, yet the end-result was quite as satisfactory as in those observed at regular intervals in the office.

With the patient in the lithotomy position, adequate exposure is obtained by a bivalve vaginal speculum, inside of which is inserted an ordinary two-bladed rectal speculum to distend the lateral walls of the vagina and effect an efficient all-metallic tube, at the end of which appears the cervix. The cauterization finished, a 10 per cent mercurochrome, 220 soluble is swabbed over the cervix and throughout the vagina. Naturally, the leukorrheal discharge is more profuse for a week or ten days after the cauterization, and may even be quite sanguineous, if the cervix happened to be a vascular one. No vaginal douche need be taken but no harm can be done, if douching is preferred in consequence of the excess leukorrhea. Healing and epithelization is complete in about six to eight weeks after, which there is no leukorrheal discharge; likewise all other pelvic symptoms are improved or entirely relieved, if caused by the infected cervix.

The dangers and inconveniences of stenosis of the cervical canal in the menstruating woman need only be mentioned to cause a disagreeable thrill through those of us who have had such accidents occur. We have had two such cases, following rather deep cauterization in the early cases, neither of which proved serious. Both were permanently relieved of all menstrual pain by gradual dilatation in the office without the need of an anesthetic.

For the past two years cautery treatment has been used as an office procedure on ninety-three patients. With the exception of those treated within the past few weeks and still under observation, healing has occurred in most instances within four to six weeks and the results have been very satisfactory. Every patient has been improved. Two patients still have some trouble with leukorrhea, although it is much reduced in amount and not constant.

Six cases have been subsequently confined, dystocia occurring in but one. This woman, an elderly multipara, however, gave a history of considerable dystocia in all her labors. Of fifteen who were cauterized mainly for sterility, seven have become pregnant and are carrying on in normal pregnancy ranging from two to eight months.

Four were lightly cauterized for a persistent leukorrhea terminating an acute gonorrheal vaginitis, in which all efforts with the usual local applications had failed to relieve. These were true endocervicitis cases where the cervix itself was apparently normal and yet recovery was complete in three. The fourth has been done only in the past week and too short a time has elapsed to report the result.

SUMMARY AND CONCLUSIONS

1. Chronic endocervicitis is a common condition, usually neglected and frequently responsible for other pelvic diseases, such as perisalpingitis and perimetritis.

2. Its presence increases the possibility of cervical cancer.

3. It is directly or indirectly responsible for much of the sterility in women.

4. Chronic endocervicitis must be considered in treating arthritis in women.

5. Every pelvic examination should include an inspection of the cervix. A diseased condition of it should be diagnosed and treated.

6. Chronic endocervicitis due to a virulent or-

ganism is the probable cause of certain cases of puerperal sepsis and postoperative peritonitis.

7. In ninety-three consecutive cases of endocervicitis treated in the office by the electric cautery, the condition has been improved in every case and healing has occurred usually in about six weeks. A few patients required subsequent cauterization. In two cases the leukorrhea while improved is not entirely relieved. Two have required subsequent dilatation with permanent relief of menstrual pain.

8. Among the symptoms relieved are dysmenorrhea, dyspareunia, pelvic tenderness and pain, backache, menorrhagia, metrorrhagia, arthritis, sterility and nervous phenomena. Cautery treatment is contraindicated during pregnancy but may be used for superficial polypoid areas which bleed.

9. Our observations suggest that the infection and resulting changes are limited at first to the glands near the external os. This is especially true in erosions developing during the puerperium. A single superficial cautery treatment about eight weeks after delivery usually results in prompt healing within about three weeks. This more or less prophylactic measure should prevent most of the severe chronic conditions of the cervix which tend to develop after childbirth.

10. It is believed that electric cauterization with a light cautery tip is the method of choice in lacerations, erosions and inflammatory cervical lesions.

Lack of Therapeutic Value of Antimeningococcic Serum. J. Mercer Anderson, Salt Lake City, (*Journal A. M. A.*, Nov. 23, 1929), states that the ordinary commercial antimeningococcic serum was therapeutically inadequate in the treatment of sixty cases of the epidemic type of cerebrospinal meningitis. The first ten cases of this sort were 100 per cent fatal, some patients dying in less than eighteen hours and others lingering for days. Of the sixty patients, thirty-two lived and twenty-eight died, giving a mortality of approximately 47 per cent. Nine patients died in less than twenty-four hours from the time of admission to the hospital. As soon as a diagnosis was made, large amounts of serum were given intravenously and intraspinally. In addition, some patients received it intracisternally. Treatment was given two or three times daily during the first seventy-two hours. Serum was given intravenously after the second day, except in one case. Because of the great fatality of the early cases, antimeningococcic serum was secured from the public health department of one of the larger states. This serum seemed to give much better results because of such patients as received the serum, twenty-one in all, fourteen lived and seven died, giving a mortality of 33.3 per cent. In those patients receiving it alone the mortality was 29 per cent. Among patients who did not receive this serum the mortality was 54 per cent, or 21 per cent higher than among those receiving the special serum. The greatest mortality was found in cases which were fulminating—the patients dying in twenty-four hours or less from the time of admission. This group included nine cases—two patients not receiving any serum and seven receiving only one treatment. Several patients died before they could be brought to the hospital.

FIBROMYOMATOSIS UTERI*

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INTRODUCTION

The subject of uterine fibroids is well covered in the literature and is thoroughly understood by every gynecologist. The fibromyomatous uterus has, however, received scant attention, and is not mentioned at all in many recent books. Such references as are made to this subject are included in the discussion of chronic metritis, and fail to recognize the condition as a separate clinical and pathologic entity.

A review of my own cases has convinced me that the enlarged fibrous uterus found before or after the menopause must receive definite consideration. I have found them in all ages from nineteen to seventy-two years of age, twenty per cent of them being in nulliparous women. Sixty per cent of them were found in women from thirty-five to fifty years old.

HISTOPATHOLOGY

The fibromyomatous uterus is one symmetrically enlarged, with the exception that the cervix does not usually enlarge as many diameters as the body. The enlargement of the corpus uteri has been from one and one-half to four diameters, most of them being enlarged to about two diameters. They are paler than the normal uterus, smooth and firm. Very seldom are there adhesions.

On section they are hard, homogeneously fibrous, softening slightly toward the cavity which is usually symmetrically narrowed, sometimes being almost obliterated. The cut surface is striated, white and shiny.

GROSS PATHOLOGY

Microscopically they are found to consist of smooth muscle with the addition of fibrous tissue. The more muscle present, the redder the color, but as the increase in size is due more to the addition of fibrous tissue than to the increase in smooth muscle, the larger the specimen the whiter the color. In those taken from elderly women the muscle has begun to disappear as occurs in normal uteri following the menopause.

The hyperplasia of both muscle and fibrous tissue begins in the walls of the blood vessels, and spreads diffusely throughout the whole organ with no discreet areas of concentric or circumscribed formation. The connective tissue is distributed in septa, and as finer fibrils ramifying between the muscle cells. The muscle cells are larger, thicker and more granular than normal cells, and their nuclei are larger, more rounded and richer in chromatin. Their arrangement is in intertwining bundles, running in all directions without definite relation to any structural unit.

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*Read before the Academy of Surgery, Seattle, Wash., Sept. 20, 1929.

Most of my specimens have been examined by Dr. V. Cefalu, pathologist, whose findings are accepted as authority, and his reports have consistently described this histologic structure.

ETIOLOGY

The etiology of fibromyomatosis uteri is a mooted question. Some pathologists hold it to be the result of chronic metritis but this explanation is not satisfactory, for in none of the specimens has been found the round celled infiltration that should be expected, even aside from the fact that in many cases there is absolutely no history of previous infection or inflammation. Subinvolution is more reasonably a result than a cause, and the fact that the fibrosis occurs in so many nulliparous uteri increases the weight of opposing evidence.

By some writers it is considered to be the result of embryogenetic disturbances in the structural development of the uterus. They point to the fact that the tubes, uterus and vagina split off from the wolffian ducts at an early period, and also to the fact that myomata of structure similar to that of uterine myomata are found isolated, and in widely separated locations apart from the uterine body. The frequent heterotopic inclusion of epithelial, cartilaginous, osseous, lipomatous and rhabdomyomatous structures in myomata convinces them. However, this usually occurs in adenomyomata, while the fibromyomatous uterus shows no adenomatous infiltration or inclusions, and should be differentiated from the adenomyomatous uterus.

The true etiology is suggested much more plausibly by the fact that the uterus and vagina receive their muscular tissue originally from the walls of the blood vessels, while the histopathologic picture of the section from the fibrous uterus shows the hyperplasia beginning in the walls of the vessels. Thus a disturbance in the growth of the blood vessels would enable an exciting cause to initiate a pathologic development of the whole organ.

The exciting cause is undoubtedly hyperemia and may be active or passive, intermittent or chronic. The cause of the hyperemia may be functional, such as coitus, too frequent or imperfect, or onanism; postural, such as retro- or anteversion or flexion; mechanical, due to pressure from adjacent organs, tumors, frequently distended bladder or rectal impaction; thermal, such as frequent douches, enemata and therapeutic measures; or may be due to endocrine dyscrasia.

Some authors maintain that the exciting cause is always local irritation, often produced by the normal or abnormal intermittent contraction of the uterus itself. The old idea of local irritation from parasitic invasion has been abandoned.

Ovarian disease as a cause of hyperemia must be given very serious consideration. Ovarian activity physiologically causes the menstrual hyperemia, and disturbed ovarian function undoubtedly causes excessive uterine hyperemia. The frequency that ovarian disease occurs with uterine hypertrophy is significant.

SYMPTOMATOLOGY

The symptoms of fibromyomatosis uteri are the same as for intramural fibroids, producing the same degree of uterine hypertrophy. Pelvic pain or discomfort, lumbar backache, sciatic pain, dysuria, constipation, rectal tenesmus, edema of the lower extremities and menorrhagia are the most common.

Examination reveals a smooth symmetrically enlarged uterus of abnormally firm consistency, usually with more or less degree of prolapse, freely movable unless of great size or degree of prolapse. The uterine sound reveals an increase in the depth of the uterine cavity and the curette will usually show accompanying endometrial pathology.

TREATMENT

The ideal treatment for fibromyomatosis uteri, per se, is irradiation. However, so many patients, whom I have referred to radiologists for this treatment, have returned later for operation on account of other pelvic pathology that I now perform hysterectomy, unless there is real contraindication. My records for the past ten years show that, excepting seven of my patients, all those that have undergone hysterectomy have required a laparotomy for concomitant pelvic pathology of such nature as would not be benefitted by irradiation.

Among these predominate pathologic ovaries and tubes, relaxed round and uterosacral ligaments and prolapsed bladder due to the weight of the hypertrophied uterus. Cystocele is a common accompaniment of enlarged uterus, and after irradiation the condition remains and is often worse, due to the dropping of the uterus, no longer supported by the round and uterosacral ligaments which have become enlongated by the increased size of the uterus. I feel, therefore, that hysterectomy, either supravaginal or total, depending on the condition of the cervix, is the operation of conservative choice.

CONCLUSIONS

1. Fibromyomatosis uteri is a pathologic entity, and is to be differentiated from chronic metritis, adenomyomatosis uteri, fibromyomata and adenomyomata.

2. The cause is hyperplasia of the cells from vessel walls and not from heterotopic embryonal anlagen or inclusions.

3. The treatment is surgical extirpation.

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FIBROIDS FROM THE SURGICAL STANDPOINT *

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Any neoplasm demands attention which is found in twenty per cent of women over the age of thirty-five and in forty per cent of all over fifty. The problem is somewhat lessened by the fact that in approximately one-half the cases troublesome symptoms and harmful pathology are absent. In this discussion this type of case will be practically ignored except to state that a fibroid, symptomless and apparently harmless today, may not be so at a later date and no patient harboring one of these tumors should be dismissed without being advised of the value of periodic examinations.

Treatment of any condition to be rational must be based on an appreciation of the pathology involved and we shall attempt to found our recommendations for surgical treatment on this basis. Admitting that a fibromyoma per se while pathologic is not harmful, what are the secondary pathologic conditions induced by the tumor, the presence of which demands treatment of the original growth.

Let us consider, first, changes in the tumor itself. They may be grouped under three heads, benign degeneration, infection and malignancy.

When the tumor is young, it is definitely composed of two types of tissue, nonstriped muscle and fibrous tissue. As it grows, due to a relatively decreasing blood supply, the fibrous tissue grows at the expense of the muscle until the latter is largely or wholly displaced and in the older growths are often find an almost pure fibroma. As it continues to grow the blood supply frequently becomes insufficient for even the resistant fibrous cell and degenerating processes supervene in at least twenty-five per cent of cases. These degenerative processes start with a hyalinization, run through fatty, cystic, calcareous and other changes and if neglected may go to the point of total necrosis. Any stage beyond fatty degeneration shows itself in local tenderness and pain, increase in size and decrease in density of the mass, moderate elevation of temperature and some leucocytosis.

The next condition of the tumor itself to be considered is infection. This may come by way of the vagina, blood stream or through adhesions to the bowel or diseased adnexa. The symptoms are the same as those in degeneration but the severity of these symptoms is increased.

The last condition that we will consider as starting within the tumor itself is malignancy, sarcoma. Lynch says that careful examination of all symptoms producing fibroids will probably show an incidence of sarcoma in four per cent, and in those cases of fifty years and over in twelve per cent. Winter apparently agrees with at least the first figure as he says, "if all fibroids were untreated the death from malignancy alone would be twice the operative death in good hands." Unfortunately we have no pathognomonic sign or symptom that will enable us to diagnose an early sarcomatous change in fibroids, but must rely on the same danger signals which point to the relatively benign degenerations with possibly an unwarranted degree of cachexia being more common in malignancy.

Passing from the tumor itself to the uterus we must recognize another type of malignancy, carcinoma of the fundus. What is the relationship of fibroids to carcinoma of the body of the uterus?

In general, cervical as compared with corporal carcinoma shows an incidence of eight to one. Novak has collected a series of twenty-two hundred and seventy-four cases of uterine fibromyomata which showed an incidence of one and eight-tenths per cent carcinoma of the fundus as compared with seven-tenths per cent cervical carcinoma. Other investigators seemed to agree with this, and if we admit it to be true we must recognize the fact that the presence of a uterine fibroid multiplies by twenty the normal hazard of carcinoma of the uterine fundus.

This brings us to the subject of uterine bleeding. The bleeding, due to uterine fibroids, is determined

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* Read before Pierce County Medical Society, Tacoma, Wash., Nov. 12, 1929.

by their relationship to the endometrium. A large tumor, essentially subserous, may produce no increase in blood loss, while a submucous growth of insignificant size may result in alarming hemorrhage.

Another point to be remembered in connection with uterine bleeding due to fibroids is that it is menorrhagic. It is true that the menstruation may be so prolonged that there is hardly any intermenstrual free period but it is menorrhagic nonetheless. The two notable exceptions to this are a sloughing fibroid and a pedunculated submucous fibroid that has entered the cervical canal. If in the absence of both of these conditions the patient has intermenstrual bleeding, we are probably dealing with malignancy.

Another interesting point in the effect of fibroids on menstruation is the postponement of the menopause. Women with these growths will frequently menstruate regularly up to the age of fifty or fifty-five, and some writers are willing to assume that any woman who menstruates regularly after age fifty is harboring a uterine fibroid.

Taking up extrauterine pelvic conditions, we find that fifty to seventy per cent of all symptom-producing fibroid cases have some associated pelvic inflammatory condition or ovarian neoplasm. It may be disputed but it seems reasonable to assume that pelvic engorgement due to adnexal inflammation may be a factor in stimulating fibroid growth. It is certainly true that associated pelvic pathology is responsible for an admitted error in fibroid diagnosis which probably exceeds ten per cent.

Turning from the genital system let us consider the blood vascular system. Anemia is the rule in fibroids and is due to two causes, first, actual loss by bleeding; second, blood destruction due to toxicity caused by tumor degeneration and infection. The anemia is greatest and hardest to combat when the two factors of actual bleeding and blood destruction are combined, as in the case of an infected submucous growth.

Due to anemia and toxicity the heart suffers and brown atrophy, fatty degeneration, myocarditis and endocarditis are found in a surprising number of cases. That this is not all due to blood loss is proven by Flick who found cardiac pathology in one-third of nonhemorrhage cases.

The urinary system carries its share of damage in fibroid cases. Painless frequency is the most common of the pressure symptoms. This may be annoying only, but with ureteral instead of vesical pressure we have produced a back pressure, resulting in any degree of kidney pathology up to and including complete renal destruction. Kidney pathology without the pressure factor, but due entirely to toxicity caused by fibroid degeneration, is definitely recognized and various writers have described a true nephritis as due to this cause and which has disappeared on removal of the offending growth.

The effect of fibroid on the bowel is purely mechanical and is limited to those tumors which produce bowel pressure, due either to their size or position. We will not enumerate their symptoms but will simply state that they may be insidious and easily overlooked, as well as most marked in cases approaching total obstruction. We should not leave the digestive tract without calling to mind the fact that here, too, toxicity plays a part and digestive disturbances may be due to toxic absorption from the tumor as well as poor elimination due to bowel pressure.

In considering the relationship of uterine fibroids to the ductless glands it is recognized that the presence of thyroid pathology in these cases is probably more than a coincidence. The detoxication theory of thyroid function would seem to be supported by the frequent enlargement and increased activity of the gland in many of the rapidly growing tumor cases, and the argument according to some seems to be settled when removal of the growth returns the patient to normal without any treatment directed to the gland itself.

The final system to be considered before arriving at a consideration of treatment is the nervous system. Here we are forced to consider symptomatology rather than pathology as the writer has been unable to find any reported pathologic data. The symptoms may be mild or severe to the point of insanity and it seems reasonable to explain them in four ways, toxicity, pure phobia, inferiority complex and thwarted maternal instinct.

It is hard to elaborate the first three of these considerations and their importance will be variously estimated by you, but with sterility we can deal with figures. The average sterility at age thirty-eight is ten per cent, while sterility in fibroid cases is thirty.

Remembering that we are considering only those tumors which produce symptoms and having tried to view these symptoms in the light of the pathology responsible for them, what is the logical method of treatment?

Let me recall briefly to your mind a few points. The incidence of sarcoma is 4 per cent, carcinoma of the fundus 1.8 per cent, so-called benign degenerations 25 per cent, associated adnexal disease 50 per cent, admitted error in diagnosis 10 per cent. With these figures add the fact that fibroids multiply the average total sterility by three. These facts alone call for active rather than expectant treatment.

What is the treatment to be? Any treatment to be logical and fair must be based not only on pathology but also on mortality and morbidity. Major surgery in uterine fibromyomata carries with it a mortality averaging four per cent. It will doubtless be admitted that the morbidity following the surgical removal of these growths in properly selected cases cannot be considered large, provided the type of operation is made to suit the patient.

From the foregoing it seems to be fair to say that, excluding only these cases having constitutional or local conditions that would unfairly raise the risk, all symptom-producing fibroids should be surgically removed. At first thought this statement may seem to be sweeping and radical but careful consideration will, we believe, prove it to be truly conservative.

The final consideration in the surgical treatment of fibroids is the selection of the type of operation to be employed. Briefly we have three essential points to consider. First, can the tumor be removed and a functioning uterus allowed to remain; second, if a hysterectomy must be done, should it be subtotal or total; third, what constitutes true conservatism in dealing with ovarian tissue in fibroids?

Time does not allow of their detailed consideration but the answer to these questions will determine to a large extent, not operative mortality but real success or the lack of it in fibroid surgery. In conclusion, I would say be as radical as necessary and as conservative as is compatible with safety.

IMMUNIZATION AGAINST TUBERCULOSIS BY BACILLUS (CALMETTE-GUERIN B C G). Gerald B. Webb, Colorado Springs, Colo. (*Journal A. M. A.*, Nov. 9, 1929), is of the opinion after careful study of the literature and after personal investigations and experiments that B C G should be administered to infants born to parents with open pulmonary tuberculosis. With further proof of the harmlessness and efficiency of the vaccine it may be found that all newborn infants should be vaccinated against tuberculosis with B C G.

QUININE IN THE TREATMENT OF EPIDEMIC HICCOUGH *

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The teaching of Setschenow that special centers exist in the optic thalami and corpora quadragemina which he designated as inhibitory centers has been disputed. Whether we accept or reject this teaching we must admit the existence of inhibitory nerves which control reflex action.

This discussion of the effects of the cinchona alkaloids upon the inhibitory mechanism can be neither exhaustive nor conclusive. It is rather a clinical study, introducing some considerations of these alkaloids as practical medicinal agents.

It is with no slight hesitation that a purely pharmacologic topic of this kind is approached. Our profession is so tinctured with therapeutic nihilism in regard to medicines that it requires some temerity to plead the cause of such an old remedy as quinine. In the opinion of the writer this nihilism is responsible for a certain weakness in medical practice which has contributed largely to the entrenchment of the drugless cults.

After the introduction of the coal tar derivatives the use of the alkaloids of cinchona came to be almost limited to the treatment of malaria. Other uses of the drug were ignored.

Pharmacologists in their study of cinchona came to the general conclusion that the physiologic action of all its twenty-five recognized alkaloids is comprehended in the action of one, quinine. Clinical observation, as we shall see, has shown in at least one instance that one alkaloid cannot be replaced by another in the practice of medicine.

It is unfortunate that one great pharmacologist, whose chief work has been the textbook for students in many medical colleges, begins his discussion of quinine with the statement that it is a protoplasmic poison.[1] He gives the student the impression that quinine is a criminal among drugs. Witness the following sentence: "These experiments indicate that quinine hinders some if not all of the processes which normally occur in living matter." Scant reference is made to its action on the nervous system, while a large section is given to remarks on the lowering of metabolism and the reduction of body temperature.

A great deal of such research, scientific as it is, meets with contraindication when the clinician uses the drug in question. Quinine is not now employed for the reduction of temperature, while its action in lowering metabolism is sought only in the treatment of exophthalmic goiter. The physician avails himself of this property only incidentally to the effects upon the nervous symptoms of this disease.

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* Read before Pierce County Medical Society, Tacoma, Wash., Oct., 1929.

It is the purpose here to bring forth some possibilities of the effects of quinine on the nervous system which have been forgotten or perhaps have not become a part of our accepted knowledge. Let us summarize with Tigerstedt[2] our definite knowledge of reflexes with regard to their inhibition. "Reflex processes may under certain circumstances be retarded or entirely stopped by stimulation of different portions of the brain stem, of the cerebrum itself, or of afferent nerves in general. * * * This inhibition of nerve cells in the central nervous system would be entirely analogous to those inhibitions induced independently of the central nervous system, e.g., on the heart by stimulation of the cut vagus or on the intestine by stimulation of the cut splanchnic."

The alkaloids of cinchona definitely diminish reflex action and in large doses abolish reflexes entirely. Some observers maintain that this action of the drug begins in a paralysis induced in the peripheral sense organs. This is one of the important effects of quinine. Until superseded by the coal tar products it was employed to a great extent for the relief of pain in neuralgias, tics, etc. It is now revived in the guise of the cinchophen group. As a local anesthetic for operative work we are familiar with its property of paralyzing sensory nerves. It is impossible, however, to account in this way for the depression of reflex action by this drug. How explain on the theory of sensory paralysis such an effect as that of quinidine in auricular fibrillation?

This clinical use of quinidine seems to exemplify its inhibitory action to a nicety. One can almost visualize the drug as it arrests impulses which agitate the "pace maker," the sinoauricular node. On the other hand, experiments[5] have demonstrated that a frog's gastrocnemius immersed in a weak solution of quinidine and the muscle of a dog's heart bathed in similar solution manifest a reduction of excitability. So that probably the heart muscle under quinidine cannot respond to all the stimuli that give rise to auricular fibrillation. The former theory, that of inhibition, seems the more likely explanation, being analogous to the action of digitalis on the vagus, the inhibitory nerve of the heart.

Quinidine has been dealt with at this point for two purposes, first, to show the difficulty of being dogmatic in regard to the physiologic action of drugs; and, second, to illustrate the point that two of these alkaloids may behave in exactly similar ways when studied physiologically and yet differ in their clinical effects. Quinine will not entirely replace quinidine in the treatment of auricular fibrillation.

Is it possible that any drug can have a selective action upon inhibition in general, to stimulate or to paralyze that function? Hugo Munsterberg explained the effect of alcohol, psychologic and physiologic, on the basis that it paralyzes inhibition. At the other extreme stands quinine as a stimulant to inhibition. Wood, the elder, whose activities were outstanding at the time when pharmacologic dynamics held the place in our profession now occupied by laboratory research, taught that quinine is a stimulant to Setchenow's centers, in which he was a firm believer.

With this in view Wood recommended that chorea be treated with quinine as a symptomatic remedy. The suggestion was followed by a few clinicians who reported favorably. In the furore for pathology and etiology which followed that era, and which led to the nihilism for which Osler was somewhat responsible, symptomatic remedies of this character were largely discarded.

On the same rationale quinine was at one time a valued remedy in whooping cough, having been replaced by a more palatable drug, antipyrin. It has been of value also for the relief of the cough of measles and for the control of enuresis.

Belladonna acts differently in these spasmodic affections. It relaxes spasm by depressing motor nerves, diminishing their excitability. Proper combinations of quinine with atropine might yield some new results in these rebellious diseases.

Involuntary movement is a release phenomenon. Inhibition is lacking. This is the conclusion of certain English teachers.[4] This is a different conception from that of irritation as a cause of involuntary movement. We speak of the reflex irritation of pin worms on the bladder center as the mechanism of enuresis. The other view is that the irritation of the rectum by pin worms removes inhibition from the bladder center.

Among involuntary movements is tremor. Here in the Northwest this suggests exophthalmic goiter. Forcheimer[5] began the use of quinine in Graves' disease about 1880 because it controlled the neurosis. Without ergot but aided by the latter he found it controlled, first, the tachycardia, next the size of the goiter and, third, the tremors and exophthalmos. He says it is possible that quinine stimulates the inhibitory centers.

In the tremors of paralysis agitans the writer has found it of some value. In so-called nervous chills a dose of quinine acts very promptly. This, of course, may be psychic.

In tics, habit spasm, athetosis, torticollis and tetany it would seem logical to make thorough trial of quinine in sufficient dosage before resorting to radical treatment such as producing a temporary paralysis of the facial nerve by injection of alcohol into the nerve, or injecting alcohol into the cerebral cortex, as had been done for tetany before the calcium deficiency in this disease was discovered.

Cardiospasm and pyloric obstruction where spasm is a factor should have a trial of quinine before the use of bougies or Ramsted's operation. Hiccough is an interesting condition, produced by a complicated reflex process frankly not comprehended by neurologists. Chorea, also a disease whose modus operandi has been but little understood, is now thought to be a cortical affection.

Some slight success with quinine in the treatment of chorea led the writer to try the effect of full doses hypodermically in several cases of epidemic hiccough which followed closely upon the epidemic of encephalitis lethargica. Rosenow proved to the satisfaction of a majority of open minded men that this epidemic hiccough was caused by a streptococcus similar to, if not identical with that causing encephalitis. He gave it the name of streptococcus singultus. To prove the identity of the two conditions, Hannis[6] reported a case of acute epidemic encephalitis, in which hiccough was a pronounced feature from the seventh to the twenty-third day of the disease.

The older writers seem not to have encountered this disease. In their writings persistent hiccough was considered hysterical or without known cause, unless associated with grave constitutional disease or following operations. Many of the older textbooks fail to mention hiccough.

A careful search of the literature reveals only one reference to quinine as a remedy for hiccough. This is in an exhaustive article by de Brun.[7] He lists it without comment in a catalogue of thirty drugs that may be used for hiccough. He also lists twenty-three mechanical procedures that might possibly control hiccough.

Osler's textbook discards everything except a large dose of morphine. Recent recommendations include ephedrine in the nostrils, cocainization of Meckel's ganglion with cocaine mud,[8] inhalation of carbon dioxide[9] and even intubation in a hysterical case. The records of cases treated by these last three somewhat heroic measures will hardly appeal to the reader as methods of choice. The treatment required frequent repetition in the majority of cases over considerable periods of time.

Cases of epidemic hiccough treated by quinine in the hands of the writer numbered only eight. However, nearly all had resisted the usual treatment. One had suffered four days without cessation even during sleep. He had spent two of these days in hospital where "everything was tried" and had left the hospital in despair. An intramuscular injection of seven and a half grains of quinine and urea hydrochloride in the buttock was followed by complete cessation within fifteen minutes. Hiccough returned about twelve hours later, lasting about an hour. A second injection was given sixteen hours after the first. The attack did not return.

Another patient who had hiccoughed for twenty-four hours was given an injection in the late afternoon. It was followed by as prompt relief. As he was going into the country he was given ten grains of quinine sulphate to take later, if there was any return of the trouble. He sent word that on a slight attack he took the capsules and had no recurrence. The other cases were similar except that three required only one injection.

Two colleagues have made personal reports of one successful case each in epidemic hiccough. One of these men used this method with success in the hiccough of a terminal case of pulmonary tuberculosis. It gave no result in the writer's hands in one case of terminal hiccough in acute lobar pneumonia, but a surgeon reports that it seemed to be successful in the postoperative hiccough in a case of amputation for obliterative endarteritis.

SUMMARY

1. The alkaloids of cinchona depress peripheral sensory nerve organs, and are effective in relieving pain and neuroses.

2. A definite inhibitory effect can be expected

from these alkaloids upon reflexes and various involuntary movements.

3. In a small number of patients affected with epidemic hiccough quinine seemed to act as a specific.

4. It might be profitable to seek an optimum dosage of quinine combined with atropine for the treatment of such spasmodic ailments as whooping cough, measles, cardiospasm, enuresis and hiccough.

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SPINAL ANESTHESIA

ITS TECHNIC AND APPLICATION. A DEMONSTRATION*

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The use of spinal anesthesia, or more properly, subarachnoid analgesia, is not new, it having been introduced in 1885. There were periods of popularity, however, each followed by a time of distrust. During the past ten years the number of careful operators using it has steadily increased. The principal points of its technic have become standardized, its dangers and adaptability largely agreed upon. My own experience covers just beyond two thousand cases with no fatalities.

In a few of the early cases we had experiences that I should not like to repeat. All of these disagreeable times were centered around vasomotor disturbances. A better understanding of the physiology of these vasomotor phenomena, although there is much yet to learn, has enabled me to foresee the dangerous symptoms and to largely forestall them.

I have selected an average sized, physically normal, individual on whom to demonstrate the methods of producing subdural analgesia, used upon my cases. This person has had the anesthesia a few days ago; he understands the purpose of this demonstration and is quite anxious to cooperate. We have proceeded with him and shall continue just as though he were to be operated upon for some abdominal pathology. His lower bowel was emptied by an enema this morning. The anesthesia was explained to him, especially the feeling of numbness in his limbs and body and the possibility of some tightness through the diaphragm and lower chest. He has been told that the feeling of tightness as well as some other disagreeable symptoms can best be overcome by continually breathing very deeply, using the upper part as well as the lower part of his chest.

My surgical nurse has placed upon this tray everything used for the anesthetic. First, there is an empty 2 c.c. hypodermic syringe, which was used to give him ¼ grain of morphine and 1/150 of atropine half an hour ago. When he cames into the operating room, he is given one ampoule of ephedrine and his blood pressure is taken and reported. The empty ampoule is here beside the 2 c.c. syringe containing the ephedrine, with a very fine needle adjusted. This is given intramuscularly because I believe the solution absorbs more slowly and the effect is not so abrupt.

There is a 5 c.c. glass syringe, filled with a two per cent solution of novocaine. A number 25 gauge ⅝-inch needle is on the syringe, and a number 21 gauge 1⅛-inch needle is lying by it. This is for the anesthetization of the skin and the tissue down to the canal at the site of introducing the anesthetic. There are two intraspinal needles, one a number 21 gauge, three inches long and the other a number 21 gauge, four inches long (Vim unbreakable). There are four ampoules of novocaine put up by Metz and Company for spinal anesthesia, containing 120 milligrams each, which is about two grains. We will use only two ampoules for this anesthesia, but have the other two there for emergency.

A small file for opening the ampoules, an empty medicine glass and a small glass rod, an empty 10 c.c. glass syringe that fits snugly on the spinal needles, a small cotton ball, a package of sponges and a couple of towels are also at hand. It is needless to say that all of these things are sterile. The three needles and the glassware are dry sterilized to prevent any water or foreign protein from entering the anesthetic material.

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*Read before the Fifty-fifth Annual Meeting of Oregon State Medical Society, La Grande, Ore., May 16-18, 1929.

I shall induce the anesthesia and then take up each point in rotation and discuss it briefly.

The patient is sitting on the table, well back to the edge. The assistant receives a sponge and with alcohol scrubs the back, including especially the crest of the left ilium. The surgical nurse and I have both scrubbed and this nurse finishes the preparation by placing a towel under his hips and going over the field again with alcohol. I shall sit down behind the patient and ask him to lean forward, bowing his back out. I place the fingers of my left hand on the crest of the patient's left ilium, extending my left thumb horizontally to the fourth lumbar interspace. There I can select the second, third or fourth interspace as decided upon.

I receive from the nurse the 5 c.c. syringe filled with the two per cent novocaine solution, with a 25 gauge ⅝-inch needle and tell the patient there will be a very slight prick of the needle. By pressing firmly with the ball of my left thumb on the spot where I expect to introduce the needle, and if I put it perpendicular to the skin and am lucky enough not to hit a nerve ending, the patient will not feel any pain. I make a wheal in the epithelium and inject the subcutaneous tissues.

I change to a number 21 gauge, 1⅛-inch needle and inject the ligaments down to the ligamentum subflavum. I then select in this case the three-inch needle, from which the nurse has withdrawn the stilette. I place the point of it in the wheal in the skin, being sure that the bevel is longitudinal to the fibres of the meninges. I shall support it with the finger tips of both hands and push it in with my right thumb.

I can easily tell when it enters the subarachnoid space by a little click that is either felt or heard, sometimes both. I take the intraspinal pressure with a mercury manometer, and if it is above normal, I draw it down to about normal and discard the withdrawn fluid. The normal pressure, in the sitting posture, is between twenty and twenty-four. I then let the fluid drip into the medicine glass, in which has been emptied the amount of novocaine that I have instructed the nurse to use. In this case it is two ampoules, which is the amount generally given to average sized adults. With the glass rod I stir the mixture until the novocaine is all dissolved, when there will be as much as 4 c.c. in the glass. The nurse drops a tiny piece of cotton into the fluid. I place the nib of the 10 c.c. syringe on the cotton, holding the medicine glass in my hand and drawing the fluid into the syringe, filtering it through the cotton. I turn the end of the syringe up and force out the air, then place it firmly on the needle, over which the nurse has been holding her finger since I took the glass away, in order to keep from dissipating the spinal fluid.

I make sure that the syringe is firmly on the needle and I draw out as much more fluid as needed to produce anesthesia to the proper level. I then force the fluid containing the novocaine into the spinal canal at a reasonable rate, withdrawing the needle. I saturate the remaining cotton with alcohol and rub the skin from side to side and up and down thoroughly. The patient is put on his back in a comfortable position and the head of the table lowered enough to insure his head being lower than his shoulders and hips. Within a very few minutes the anesthesia will be complete. The blood pressure is taken frequently and the patient watched for vasomotor disturbances, manifested by nausea, vomiting and pallor.

The patient is told all about the procedure in order that he may not be surprised at things that happen and may be able to cooperate in every way. Here I wish to say there are some patients who are so constituted that it is impossible for them to take a spinal anesthetic successfully. They cannot bring themselves to accept it. And this, I believe, is the only contraindication.

Some surgeons have given local and general peritonitis, rupture of the intestinal tract and acute appendicitis as contraindications because of the contraction of the intestinal musculature. I am sure a little thought will convince you that such a result of spinal anesthesia is an advantage rather than a disadvantage. While many men are successfully doing upper thoracic, neck and head surgery, and while we have been doing thyroidectomies, breast amputations and other work of this type satisfactorily, it would be my advice that you let your conscience be your guide. I feel certain there is still much about the physiology of the nervous mechanism of the heart and respiratory centers that we do not know, upon which future years will shed more light. Until then spinal anesthesia for surgery above the diaphragm should be done with caution. We had best not throw discredit upon a valuable procedure by crowding the limit of its usefulness.

We use ephedrine because we believe it is more certain and lasting in its action in raising and maintaining the normal blood pressure level. The patient sits upon the table with his back well bowed out because I believe this gives the best opportunity for a clean puncture, avoiding blood vessels as much as possible, although asthenic cases may have the anesthetic administered while lying on the side with knees and head drawn together.

One cannot tell anything about the intraspinal pressure by the rate at which the spinal fluid flows through the needle. Consequently it is best to take the pressure with a manometer and be sure it is not higher than normal, because with equal pressure there is equal diffusion. I never use a spinal anesthesia other than in the second, third or fourth lumbar interspaces but depend upon the amount of fluid withdrawn and reinjected and the amount of novocaine to govern the height and length of the anesthesia.

When doing work on the lower limbs or the perineum, it is not necessary to use more than 4 c.c. of spinal fluid anesthetic, thereby not involving the splanchnic centers and consequently preventing vasomotor relaxation. In this type of anesthesia, where the splanchnic areas are not involved, it seems unnecessary to lower the head of the patient after using the anesthetic unless the symptoms of cerebral anemia appear.

From my experience it does not seem that lowering the head of the patient influences a diffusion of the anesthesia or the height of the anesthetic. In administering higher anesthesia, that is, where as much as 10 c.c. of anesthetic fluid with four grains of novocaine are used, I feel that the blood pressure drop will be sufficient to cause a rapid cerebral anemia with the symptoms of nausea, vomiting and pallor, if not counteracted by the use of ephedrine and the lowering of the head.

The only complication that has ever troubled, and that very infrequently, is a vasomotor disturbance causing cerebral anemia and the symptoms that it produces. Lowering the head to a greater degree, using oxygen inhalations and repeating the ephedrine are the methods used to counteract it.

In recommending spinal anesthesia for general work below the diaphragm, I should advise extreme caution, not because it is more dangerous than other types of anesthesia, in fact I think it less dangerous than any of them, but there can be no harm in extreme caution.

ADMINISTRATION OF DIGITALIS*

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Digitalis has been known to medical science since it was brought to its attention in 1785 by William Withering. Although that is approximately a hundred and forty years ago, we have yet no drug which can replace it in the treatment of heart disturbances. The history of digitalis is a most interesting story. Perhaps its most interesting phase is the correctness of the first observation which, though discredited during much of the early work, has finally been proven to be correct.

For therapeutic application digitalis has been prepared in many different ways. The strength and assay of these preparations varied greatly, and as a result dosage was difficult. It was not until 1918 that standardization of digitalis became uniform. Since this time, however, the U. S. P. tinctures or the powdered leaf can be depended upon for assay. It is no longer necessary to use special preparations which are much more expensive to the cardiac patient.

The actions of digitalis upon the animal organism are many. These are all less or secondary to its effects upon the heart. This action, which is usually that of increasing the strength yet slowing the beat, is due to a combination of effects. Both vagal stimulation and direct action upon cardiac musculature play their roles in producing this heart effect. We have been taught that digitalis thus acts as a heart stimulant to whip up heart work. Why do we obtain good results in whipping up a tired and fatigued organ?

During the past year Starling and his coworkers have shown us that heart efficiency is inversely proportional to diastolic volume, that is, the amount of oxygen consumption needed to obtain the most efficient amount of work depends upon the diastolic volume. They also showed digitalis decreases this diastolic volume. This gives us our first satisfactory answer on the beneficial results of digitalis in heart failure. We can now think of digitalis, not as a cardiac stimulant but as a cardiac tonic which increases heart efficiency when properly used.

Withering told us to use digitalis until its action was noted on "the kidneys, the stomach, the pulse or the bowels; let it be stopped upon the first appearance of any one of these effects." This dictum clinically holds today, having been again reproven by Sir James Mackenzie.

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* Read before the Klickitat and Snohomish County Medical Society, Everett, Wash., Oct. 17, 1929

Why do we obtain good results with digitalis in some failing hearts and poor results in others? It has been stated that we may have definite types of heart failure, some of which are not helped by digitalis. In the light of our present knowledge this has not been proven. It seems more reasonable to presume that when digitalis fails, it has done so because the dose may have been insufficient, the heart may lack recuperative power, the circulatory disorder may have been extracardiac in origin, or occasionally the preparation may be of low potency.

The clinical indications for digitalis are definite. It should be used in every failing heart, in auricular fibrillation with tachycardia and usually in auricular flutter. In these conditions one need have no fear of using massive doses until the desired effect is obtained. The signs of toxicity are nausea, vomiting, bowel disturbance, such as diarrhea, pronounced slowing of the pulse, bigeminal pulse and heart-block. The therapeutic effect is usually obtained before any of the toxic manifestations present themselves and careful observation will indicate the time to withdraw the drug before toxicity is present. (However, if toxic manifestations do arise, immediate withdrawal of the drug leaves the patient no worse off). A second use of digitalis is in heart strain. Here the indications are perhaps more vague. Experience is needed to pick out those cases that will do best. However, the dosage in these cases is small and no harm could possibly come from such use.

The contraindications for digitalis have been overstressed in the author's opinion, providing one bears in mind the true concepts for its use. These contraindications have arisen because of misconception and have produced fears which on the whole have done more harm than good. The bogy of heart-block, as pointed out by Reid, does not exist. He says, "As far as I am aware there are no records of adequately studied patients who have died solely as a result of digitalis-induced heart-block." He further states, "Digitalis is often of benefit in complete heart-block with insufficiency of the heart. It is occasionally beneficial to convert partial into complete heart-block."

The fear of using digitalis in arterial hypertension has been shown to be wrong. Luten has shown that blood pressure, whether high or low in decompensation, apparently tends to approach the normal when the cardiac efficiency is improved with digitalis. The pronounced nausea and vomiting often blamed upon digitalis are many times due to the passive congestion and relieved with digitalis. Aortic regurgitation and pulsus alterans have been advanced as contraindications for the use of digitalis. In patients having these conditions in which the heart is failing, digitalis usually gives definite improvement. Caution should be used in administering digitalis to patients who have had it prescribed within the past two weeks, who have heart-block, in cerebral hemorrhage and with intravenous preparations in acute conditions. Pronounced nausea and vomiting may prevent its use orally but unless one is sure the emetic effect is the result of digitalis, it should be administered by other routes.

With the above conception of using digitalis, one immediately withdraws many conditions from the list in which it has been advocated. The author believes that digitalis should not be used as a routine measure in preoperative preparations, in infectious fevers, in toxemias, in tachycardias, in irritable heart conditions, in patients in whom a murmur has been found and no symptoms have been produced, nor in pneumonia. Its use has been shown to have but little effect in the presence of acute carditis. For this reason its use in children is limited.

Ten years ago it was considered good therapy to digitalize a patient with pneumonia. This view is no longer held because animal experimentation has shown that the heart muscle in pneumonia is usually normal and that an impaired myocardium is an unusual cause of death in this disease. As is pointed out by Treiman, why add the toxicity of digitalis to the already present toxemia of pneumonia? Of course, in any of these conditions which have been mentioned, digitalis should be used if heart failure presents itself. In the goiter heart the effect of digitalis is disappointing and the question of its use is debatable. It has been our practice to use it with caution when fibrillation existed or heart failure was present.

The question of dosage and route of administration has been carefully studied by Pardee, Gold and DeGraff, Bromer and Blumgart, Eggleston, White and many others. Oral administration in the ordinary patient is the choice because of the ease with which it can be carried out and the rapidity of effect. If nausea and vomiting prevent the oral administration, it may be used rectally, the dose being practically the same. The dose to be given depends upon the method chosen. This may be either by the small or the massive dose method. The small dose method is probably the more satisfactory for ambulatory patients and the massive the more satisfactory for those patients showing more advanced failure.

The small dose method which is the older has been carefully studied by Gold and DeGraff. We usually use 25 or 30 mm. three times a day for forty-eight to seventy-five hours. If neither toxic nor beneficial results are noted, the dose may be increased for the next twenty-four hours. If the effect has been obtained, we usually give 20 to 25 mm. three times a day for three days and skip the fourth day because of the cumulative effect. However, one may use daily repetitions of small doses which would be about the equivalent to the amount which is excreted daily. This varies between 20 to 25 mm. It should be pointed out that minims are not drops and the quantity of digitalis used should be measured and not dropped from a dropper.

The massive dose method, first pointed out by Eggleston, uses .15 grams of the powdered leaves or weight and gives one-third to one-half of the total 1.5 c.c. of the tincture per ten pounds of body dose at once and the remainder in decreasing doses at intervals of six hours. White has modified this to give .10 of a gram or 1 c.c. per ten pounds of body weight and administers one-sixth of the total dose three times daily for two days.

In an emergency the hypodermic method may be chosen and this should always be the intravenous route. Pardee has shown that the dose recommended by the manufacturer in most instances is much below the amount needed and suggests that 1 minim per pound of body weight of digalen or digifolin solution or 1/100 grain per eighteen pounds of body weight of digitalin tablets should be used if the patient has not had digitalis for two weeks. If the effect is not noted within two hours, a second dose of one-fourth that size may be given but only four of these subsequent doses should be used. If digitalis has been used within two weeks, the one-fourth minim per pound dose should be started with and repeated every thirty to forty minutes until therapeutic or toxic effects are noted. Digitalis is not a panacea and should be used only when indicated, combined with rest, diet, exercise, diuretics and psychotherapy.

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INSULIN AS A TONIC*

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Medication with glandular products can be expected to be consistently gratifying only when such products exert physiologic effects favoring the desired results. The claims for benefit from glandular therapy have been legion. Most of such claims have been short lived and justly so. A few procedures which have been tried empirically and found successful have offered problems for study and investigation. The use of insulin as a tonic is one of these. With the demonstration of its effect upon gastric and pancreatic secretion and bile flow, such use seems to have been elevated from empiricism to rational therapy.

Presently after the isolation of insulin continental clinics evidenced great interest in its use as a tonic in cases of undernutrition. A considerable literature was developed favoring such use. In America it has not received considerable attention. However, the reports that have been made are generally favorable. It remained for Okada et. al. from Japan to report clinical investigations which seem to place such medication on a rational basis. In an article entitled "The Humoroneural Regulation of the Gastric Pencreatic and Biliary Secretion"[1] these authors have brought forth interesting data. Aware of the fact that Naunyn[2] had proved that puncture diabetes has an inhibitory influence on the secretion of the bile, that Glaessner and Pick[3] had proved that large doses of epenephrine hydrochloride stopped the secretion of pancreatic juice and

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[*] Read before King County Medical Society, Seattle, Wash., Nov. 4, 1929.

that various investigators had reported that insulin stimulated the formation of gastric and pancreatic secretion and the flow of the bile, these workers attempted to confirm the earlier findings and to determine the modus operandi.

In their studies tubes were passed into the human stomach and duodenum. After an injection of insulin there was an increased secretion of gastric and pancreatic juice. Ephedrine had the reverse effect. These results were noted to run more or less parallel to hypo- and hyperglycemia. Further investigation in achyliogastrica with insulin gave strikingly profuse gastric secretion rich in free hydrochloric acid. Such acid gastric juice might be the factor responsible for the increased flow of pancreatic juice. Fortunately cases of cancer of the stomach were found in which, after an injection of insulin, the gastric juice remained alkaline. In such cases the increased flow of pancreatic juice and bile occurred as in other cases. In further study to determine the localization of action atropine was injected. This caused a distinct inhibition of secretion. This was taken to indicate that the stimulation is central and the impulses are transmitted to the acting cells through the parasympathetic nervous system.

To test the effect of hyperglycemia on secretion, dextrose was administered through a tube into the stomach. After an initial increase in secretion which might have been ascribed to reflex action and after time for absorption of the solution, pancreatic and biliary secretion almost ceased and the stomach became achlorhydric. Following the hpyerglycemia so induced, a reactive hypoglycemia was evoked, sometimes as low as 0.059 to 0.053. This was accompanied by a profuse secretion of the digestive juices. The conclusions were that hypoglycemia in general stimulates the secretory nervous centrum and hyperglycemia inhibits; that the stimulus is transmitted to the secreting cells through the parasympathetic nervous system and the inhibitory impulse is most likely transmitted through the sympathetic nervous system.

The question of the action of the humoroneural regulation in diabetes was investigated. In diabetics the same reactions were observed but at higher levels of blood sugar. It was concluded that the process of alternating from hypo- to hyperglycemia and vice versa and not the durable state stimulates the excitatory and inhibitory functions.

The conclusions arrived at by Okada are so much worth reading that I desire to quote them verbatim.

SUMMARY

1. "Insulin provokes gastric, pancreatic and biliary secretion, and epinephrine inhibits it (only the influence of epinephrine on the gastric secretion is not so decisive). Ephedrine has an effect similar to that of epinephrine. The increased secretion of these juices after the injection of insulin is marked in the presence of a pronounced hypoglycemia, while it is nearly negative in the presence of hyperglycemia. The decrease of the secretion of these juices after the injection of epinephrine goes parallel with hyperglycemia, and is followed by an increase of secretion when a reactive hypoglycemia occurs.

2. "Also in cases of cancer of the stomach, in which the gastric juice remained alkaline during the course of the collection, a marked increase of the secretion of pancreatic and biliary juices after the injection of insulin was observed, indicating that it primarily stimulates the secretion of these juices.

3. "The increased secretion of gastric and pancreatic juices and of bile induced by the injection of insulin is almost completely inhibited by an injection of dextrose but a profuse secretion again occurs when hypoglycemia recurs. Therefore, it is definitely shown that hypoglycemia, if it does not alone stimulate the secretion of these juices, does so when insulin is injected.

4. "An injection of atropine causes a distinct inhibition of the increased secretion of these juices induced by the injection of insulin, indicating that hypoglycemia exerts its stimulating effect on the centrum of the secretory nerve and that the stimulus is transmitted to the acting tissue cells through the parasympathetic nervous system.

5. "When dextrose is introduced into the duodenum, it usually brings about an initial increase of the secretion of pancreatic juice and of bile, perhaps as a reflex evacuation of the gall and pancreatic tracts, including the gallbladder. Hyperglycemia, after resorption of the dextrose, however, stops the secretion of pancreatic and biliary juices almost entirely, and the gastric content becomes achlorhydric. Following the hyperglycemia, a reactive hypoglycemia is evoked which is accompanied by a profuse secretion of digestive juices. An intravenous injection of dextrose has almost the same effect, except that the initial increase usually

does not occur and the diminution of the gastric secretion is manifested in amount rather than in acidity. An isotonic or rather a somewhat hypotonic solution of dextrose has the same inhibitory influence on the secretion of the digestive juices as a hypertonic solution, if the amount is sufficient. Therefore, it is definitely proved that hypoglycemia in general stimulates the secretory nervous centrum and hyperglycemia inhibits it, and that the stimulus is tranmitted through the parasympathetic nervous system to the reacting tissue cells, while the inhibitory impulse most likely is transmitted through the sympathetic nervous system.

6. "The test breakfast does not cause any secretion of acid or causes a marked diminished secretion by the stomach at the stage of hyperglycemia, in comparison with its effect on the secretion of acid at a time of fasting. The motility of the stomach is also inhibited, so that the bread remnants of the test meal are detectable for a much longer time by fractional suction. Hypoglycemia is accompanied usually by hunger, and hyperglycemia by a "full feeling."

7. "Since hypoglycemia induces a humorally excitatory impulse and hyperglycemia an inhibitory impulse to the secretory centrum and since from this centrum the stimulus and the inhibitory impulse are transmitted through the autonomic nervous system to the acting tissue cells, this process might be called the "humoroneural regulation of the secretion of the digestive juices." The secretion of saliva is excepted from this regulation.

8. "In diabetes mellitus the same inhibitory and excitatory mechanism is also in force, being different from that in normal cases only in the manner of entrance of these impulses. It is evident from this fact that it is the process of the alternation of hypoglycemia and hyperglycemia that stimulates the excitatory and inhibitory functions of the secretory centrum and not the durable state of them, which perhaps causes an accommodation such that stimulation is not any longer induced.

9. "The humoroneural regulation and the humoral mechanism normally cooperate without interference one with the other, an intravenous injection of secretin causing nearly as abundant a secretion of pancreatic juice at the stage of hyperglycemia as at a time of fasting. When hyperglycemia develops, gastric secretion ceases and the entrance of the acid chyme into the duodenum also ceases, so that the secretin mechanism does not have any occasion to function during this period. A hypoglycemia causes a profuse secretion of gastric juice and an abundant gush of acid chyme into the duodenum, which in turn induces the full functioning of the secretion mechanism. When, however, a disturbance of gastric secretion occurs, as in achylia gastrica and in cancer of the stomach, the humoroneural regulation alone, without the cooperation of the secretin mechanism, excites the secretory glands of the pancreas to activity.

10. "Histamine, a vigorous excitant of the gastric secretion humorally, causes also a profuse secretion of gastric juice at the high point of hyperglycemia. Therefore, it follows that the humoroneural regulation does not have any remarkable influence on the humoral mechanism, and this in turn proves that the action of histamine does not have anything to do with the neural mechanism."

Indications for the use of insulin as a tonic are the lack of desire for food, when such lack of desire is not referable to other disease condition and undernutrition. Lack of desire for food is met with and offers a real problem, especially in undernourishment in childhood and in certain debilitated nervous and mental cases. It is fair to assume that in such states there is lacking the normal sensation of hunger. With the normal sensation lacking, the normal psychic stimulation to secretion occasioned by the sight, or even the thought of food fails. Unless nutrition is forced there is a persisting if not a progressing malnutrition. Any break that can be made into this stalemate is most eagerly attempted. The various bitter tonics, the psychotherapy, the physiotherapy, etc., that have been and are still employed, are confirmation for such a statement. But here is a natural product, the use of which seems normally to produce physiologic effects favoring the desired results.

The clinical use of insulin as a tonic consists in hypodermic administration of appropriate doses fifteen to thirty minutes preceding meal time. Appropriate doses range from 3 to 5 U for children to 15 to 20 U for adults. It is well to begin with as mall dosage, U 2 or 3 in cases of infants and U 5 to 8 for adults to learn if it is tolerated well. Lack of tolerance is evidenced by symptoms of insulin shock. The evidences of insulin shock are too well known to need repetition. It might be well however, to emphasize the fact that insulin shock or, to be more accurate, hyperglycemic shock, may come three or four or even more hours after the administration of insulin. Just as in the use of insulin elsewhere, warnings should be given concerning the significance of such symptoms and directions given concerning combatting such by the ingestion of fruit juice or sugar.

Favorable results are to be expected within one or two days. In the more gratifying case the appetite increases until there is ravenous hunger. In properly selected cases it has seldom failed in my hands to give tolerable results. If there is lack of tolerance, as evidenced early by insulin shock, administration should cease promptly. If there is lack of evidence of benefit after three or four days no advantage will accrue from further use. If there is some evidence of benefit, the dose may be pushed until the daily amount is U 40 or even U 60 for females and U 60 or even U 90 for males. The administration should be continued for from one to four weeks. It is well in discontinuing its use to gradually diminish the daily dose by omitting one injection a day.

Detailed histories of many cases, in which most satisfactory improvements in nutrition and growth have followed the use of insulin as a tonic where all other means had previously failed, would only take more space without giving further proof. This however, and confirmation of some of Okada's findings appear in the September issue of the *American Journal of Physiology.*

Quigley, Johnson and Solomon[4], working under Carlson in the laboratory of the University of Chicago, under the title, "Action of Insulin on the Motility of the Gastrointestinal Tract," report studies of the effect of insulin on the stomach of normal fasting men. The summary of their report is as follows:

1. Subcutaneous injection of insulin in amounts of 12 to 20 units usually produces in normal human subjects, fasting eleven to forty-four hours, an increase in gastric motility as recorded by the triple balloon method.

2. The essential features of this response are (a) an increase in gastric tone, (b) type A contractions, (c) a very prolonged hunger period.

3. The gastric hypermotility induced by insulin is not inhibited by smoking, mild nausea, unpleasant emotions, body discomfort, sight or thought of food, extraneous disturbances, swallowing or the presence of indifferent substances of food in the mouth or in the stomach.

4. The gastric motility is inhibited by introduction of dextrose or cane sugar into the duodenum, and also by the subcutaneous injection of atropine or epinephrine.

5. "Insulin sensations," especially hunger, parallel rather closely the degree of gastric activity.

6. Under the experimental conditions described antiperistaltic movements in the stomach were not associated with sensations of nausea.

CONCLUSIONS

The use of insulin as a tonic in certain cases of malnutrition was undertaken as an empirical medication.

Investigation has shown that insulin favors the flow of gastric and pancreatic secretion and bile.

Investigation has elevated such use of insulin from an empiricism to one of rational therapy.

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A PHYSICAL THERAPY DEPARTMENT
ITS SCOPE IN A GENERAL HOSPITAL *

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Following the impetus of the large scale application of physical therapy during the period after war and its successful continuation to the results of the eternal warfare of peace, industrial diseases and accidents, modern hospitals are gradually equipping themselves with physical therapy departments. In the hospital number of the *Journal of the American Medical Association,* March, 1928, one-third of the general hospitals of the United States reported physical therapy departments, while approximately one-half of the industrial and of nervous-mental hospitals, and forty-two out of sixty-two orthopedic institutions reported likewise. These figures show where physical therapy is primarily recognized in institutional work. In March, 1929, one-half of the general hospitals reported a department, a very substantial increase in one year. This number is likely to increase further, especially since the American College of Surgeons has urged that all Class A hospitals should possess full fledged physical therapy departments.

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* Read before the Clinical Society of the New York Polyclinic Medical School and Hospital, March 4, 1929.

While thus there is little doubt that physical therapy is taking its place as a recognized method for the cure or relief of pathologic conditions, there is quite a long road ahead until the "growing pains" of this branch of therapeutics have quieted down. The chief reason for some of the difficulties of the present is that until a few years ago only comparatively few men received comprehensive training in physical therapy, and then usually only through private study or experimentation. Medical schools, both undergraduate and graduate, neglected the subject, and as a result the great majority of the profession had no opportunity to learn *why* there is a scientific basis for the application of certain physical measures, *when* to recommend these, and, moreover, very few medical men had any definite idea *how* to apply them.

This lack of knowledge by competent medical men led to the use of these measures by laymen and physicians on the border line of the profession, who, in spite of their ignorance or commercialism, often commanded a lucrative clientele because they gave many of their patients relief which they did not get from orthodox medical and surgical equipment. With the fully warranted change in the attitude of the profession towards physical therapy, and the public's instinctive leaning towards it, many medical men are unfortunately repeating the crude mistakes of the border line physical therapists. They buy wholesale outfits of apparatus, generally on the advice of salesmen, and are applying it to the indiscriminate varieties of conditions listed by the manufacturers and uncritical enthusiasts. The results are good, indifferent and bad, according to the chances of hitting and missing, and there is not so infrequently a reverberation in the form of law suits on account of diathermy, ultraviolet and roentgen ray burns.

The road pointing out from this undesirable state of affairs leads through coordinated institutional work, where physical therapy is applied, (1) with a thorough understanding of the existing pathology or functional disturbance, (2) with a broad knowledge of all available physical measures, with a correct technic, and (3) where data of scientific accuracy are accumulated and results finally evaluated.

In the opinion of most competent men the physical therapy department should be mainly a reference department, that is, all cases should have been properly examined clinically and by the laboratories, roentgen ray and clinical, before being sent there. Given a properly manned and fully equipped physical department, its first problem is not so much how to treat its patients, as how to receive the type of case which will most benefit by its work. Very often patients sent for physical therapy are referred much too late or should have not been sent there at all, whereas patients to whom properly applied measures would be of immeasurable benefit never are treated by physical therapy.

Hence, the chief object of this paper is to present for the information of the staff of a general hospital (1) a short resume of the various physical measures and of their principal effects, (2) to point out some of the measures indicated in the major departments of medicine, and (3) to make some general statements as to the best methods of instituting effective team work between the physical therapy department and other departments of a hospital or clinic.

PHYSICAL AGENCIES AND SOME OF THEIR EFFECTS

The casual study of table 1 at once shows the divergence of these procedures and the difficulty of their classification. Many of the said measures are interchangeable; often best results are achieved by their proper combination and sequence. For relief of pain following traumatism, limitation of motion, resoration of function of weak or paralyzed muscles, the combination of suitable thermal and mechanical measures are indicated, the first to limber up the part, the second to induce physiologic exercise. Pain may be influenced by a variety of physical agencies, according to the underlying cause. In a course given recently at the University of Paris on physical therapy for the relief of pain, the following six lectures were listed: (1) Manual treatment of pain, (2) the therapeutic and analgesic action of cold, (3) diathermy, (4) the action of irradiations on pain, (5) hot hydrotherapy, (6) ionotherapy (ionization).

In the folowing paragraphs, under the heading of each physical measure, the conditions are enumerated in which such measure has proven to be effective.

1. *Thermal measures*. Luminous heat or infrared radiations penetrate to a depth of about two centimeters, and such local heat radiation has proven clinically effective in relaxing tissues, accelerating local metabolism and in relieving pain. In traumatic conditions, such as contusions, sprains, frac-

tures, traumatic arthritis and myositis, they relieve discomfort and speed up the process of repair. Good results can also be expected in superficial inflammatory or infectious conditions, such as in boils, draining abscesses, in conjunctivitis, coryza, in draining forms of sinusitis and otitis media, and in bronchitic, local septic infections, various forms of arthritis, endarteritis and neuritis.

General applications in the form of electric cabinet baths or of dry hot air ovens or of various hydrotherapeutic procedures have proven beneficial in conditions of impaired metabolism, in some forms of arthritis, in forms of nephritis, in chilling after exposure, shock following injury or loss of blood, and finally, in neuroses and mild psychoneuroses, in the latter conditions when combined with hydrotherapeutic stimulation by the hot and cold douche.

Diathermy or "heat developed through and through" in the tissues results in (1) an active arterial hyperemia which promotes the resorption of inflammatory exudates in acute and chronic, traumatic and inflammatory conditions, of extremities as well as of internal organs (such as in arthritis, myositis, bursitis, bronchitis, pneumonia, chronic cholecystitis, pelvic inflammations, etc.); (2) it exerts a more marked analgesic action than the superficial application of heat and thus many forms of neuritis, neuralgia, myalgia and arthralgia respond more readily; (3) it exerts antispasmodic action which is specific in contrast to the irritating action of other electric procedures; attacks of angina pectoris, as well as spastic conditions of the stomach, intestines and gallbladder, have been relieved; (4) finally, there is a certain amount of bactericidal action, which is especially evident in heat-sensitive organisms, such as the gonococcus. The penetrating heat effect of diathermy diminishes the vitality of the germs and increases the power of tissues to resist. On account of these manifold effects, there is at present a tendency to apply diathermy on rather loose indications and often to the exclusion of other more definitely indicated measures. Surgical diathermy, in the form of electrocoagulation and electrodesiccation or the cutting current, is very convenient for the destruction of blemishes and neoplasms of the skin and mucous membranes, such as warts, moles, nevi, hemorrhoids, and some forms of malignancies in accessible locations.

The time honored galvanic current exerts some of its mild stimulating and pain relieving effects partly through mild heat effects in the path of the current and through electrochemical effects directly underneath the electrodes.

2. *Ultraviolet radiations.* General ultraviolet irradiations have proven beneficial (1) in surgical tuberculosis, such as tuberculosis of the glands, intestines, peritoneum, bones and joints, as well as the skin, also in some chronic forms of pulmonary tuberculosis. "Open" forms of tuberculosis respond not as well as closed ones; (2) in many forms of malnutrition in children; in rickets.and marasmus in restless, nervous, anemic and rheumatic children, inadequate increase in growth and weight, spasmophilia or tetany. On account of their general tonic effects, ultraviolet rays may act as important adjuvants in all forms of secondary anemia, in general debility or convalescence (especially after infectious diseases and operations), in repeated colds and other respiratory diseases, in asthma and hay fever, also in mucous colitis.

Local irradiations are being used as mild stimulative or destructive agents in a wide range of chronic skin diseases and infections, and in some affections of the mucous membranes. It has been the experience that the results of local treatment of any tuberculous or other lesion wil be considerably enhanced, if systematic general exposures are applied simultaneously.

3. *Mechanical measures.* Mechanical measures are applied (1) for their local effect in improving the circulation and in removing either the immediate effects of trauma, such as hemorrhage, exudation and muscle spasm, or its remote effects, adhesions and stiffness; (2) for their reflex action on nerve centers. Mechanical measures in modern physical therapy comprise massage, mechanical vibration, the static wave current and certain forms of low tension interrupted, wave and alternating currents.

Massage is the simplest and most popular mechanical measure, requiring a pair of skilled hands and a trained head for its application anywhere. Physicians should learn how to apply massage themselves, or at least when and how to prescribe it. To tell the patient to go out and get "some" massage or "some" electricity is equivalent to an instruction to go to the pharmacy and get "some" medicine. Massage usually works to best advantage when properly combined with other physical measures, such as preliminary deep or superficial heating and subsequent active or passive exercise or electrical muscle stimulation.

The faradic current modified to a pleasantly tolerable surging form is used with advantage for actively exercising weak and flabby but not paralyzed muscles after fractures and operations, for improving atony of abdominal muscles, and finally for the reduction of obesity. The lack of faradic response and the sluggish response to galvanic in muscles constitutes the "reaction of degeneration." This is the most important electrodiagnostic evidence of a lesion of the lower motor neuron, either of the anterior horns of the spinal, such as infantile paralysis or of severe traumatism, or toxic degeneration of a peripheral nerve. Testing for the reaction of degeneration enables the rendering of an almost accurate verdict from the standpoint of diagnosis, prognosis and therapy in any case of paralysis following injury or disease.

Interrupted galvanic currents or slowly or rapidly alternating sinusoidal currents induce graduated contractions in paralyzed muscles which cannot be produced by any other form of physical therapy. Such treatment preserves the deficient function of contraction until the muscle regains its lost connection with its spinal center. Electrical stimulation also enables us to exercise any individual muscle without moving the joints upon which it acts, and without putting any strain on the patient.

The wave current produced by a static machine offers a powerful means to relieve local congestion associated with pain and dysfunction, as in all acute traumatism and as in many chronic inflammatory conditions without infections. Static sparks produce sudden powerful contraction of tissues, break up adhesions, relieve muscle spasm and affect deep seated congestions, or periarthritic conditions, especially of the spine, which are beyond the reach of massage or that of other customary procedures. The static brush discharge may be described as a nebulized spark, relieving local induration and pain in an effective and painless manner. The static machine, properly utilized, still fulfills a valuable role in the armamentarium of physical therapy.

Therapeutic exercise locally applied increases the range of motion of joints and redevelops muscle power after traumatism, sprains, fractures, chronic inflammatory conditions, hemiplegia, paralysis and deformities. General exercise is indicated in conditions due to sedentary habits, such as constipation, enteroptosis; in neurasthenia, hysteria, in gastric or intestinal neurosis, in compensated valvular or myocardial lesions, and in some forms of hyper- and hypotension.

In table 2 the physical measures indicated in the major departments of pathology and the rationale of their application are presented. I wish to emphasize that this presentation does by no means aim to rubber stamp a certain diagnosis with a certain form of physical therapy. The question of the applicability and the choice of physical measures has to be determined in every instance by the state of the disease, the general condition and the individuality of the patient, and, finally, by the relative gain or inconvenience involved. Simple and efficient measures should not be omitted for complicated ones, and it goes without saying that the "cleaning of the house" is just as important as the application of local measures.

PARTIAL SCOPE OF PHYSICAL THERAPY

It is to be seen from the above enumeration, which is at best only a partial one, that physical therapy is offering potential benefit to a wide range of conditions and that it extends to all major and minor departments of medicine and surgery. The application of physical measures never runs counter to other indicated medicinal or surgical measures. Indeed, they act best when used in conjunction with them, for physical therapy has specific effect in but a few conditions. It is an undisputed fact that in many painful conditions appropriate remedial agents will obviate the necessity for sedatives or narcotics. If in lack of other definite evidence, a relatively harmless anatomic finding is suspected as a cause of pain, operation should be postponed until a course of physical therapy has been tried. On the other hand, the lack of result by physical therapy has often led to closer investigation and the clearing up of neglected diagnostic aspects.

Stock diagnoses, like neuritis, bursitis, backache, neurasthenia, are often the bane of the life of the physical therapist and can be avoided by a really careful preliminary diagnostic work as well as by constant check up and reexamination by the departments referring cases. The physical therapy department should not be made the dumping ground of chronic and incurable cases. Many conditions of fibrositis, adhesions, atrophy, ankylosis following inflammatory conditions could have been restored to useful activity by the early and intelligent use of physical measures. In recent trauma the early use of physical measures for relief of pain and for the speeding up of the process of repairs is invaluable and can be applied without interfering with immobilization so necessary in many instances.

Much valuable time is wasted and much needless suffering is maintained in hospitals which do not provide physical measures at the bedside. There is an increasing tendency in most modern hospitals to have the physical therapy department work as a unit for both in and out patients. Not only massage and therapeutic exercise, but all forms of electrotherapy, light therapy and hydrotherapy can be administered at the bedside with the many convenient and efficient types of portable apparatus now available.

Physicians referring patients to the physical department, besides giving the diagnosis and possibly some salient facts, should indicate what is to be accomplished by physical therapy, such as "relief of pain," "restoration of function," "general tonic effects," etc. It is perfectly evident that suggestions as to the type of treatment should be welcome. The value of such suggestions will depend upon how much knowledge and practical experience the referring physician has in physical therapy. In doubtful cases a consultation in the patient's presence is most desirable.

For the same reason it is advisable that directors of physical therapy departments regularly partake in the weekly grand rounds held in many hospitals, or else the members of the staff be invited to regular rounds or demonstrations given by the physician in charge of the physical therapy department. Only thus can patients be given the best possible service. The physical therapy department, the youngest and one of the most promising of medical specialties, offers potential benefit to every other department in a well organized hospital or clinic, but its proper functioning and successful development depends on the whole-hearted cooperation of the entire staff of the hospital.

TABLE 1. CLASSIFICATION OF PHYSICAL MEASURES

PHYSICAL AGENCIES AND SOME OF THEIR EFFECTS

Hot water Hot air Radiant heaters Incandescent lamps Sun Diathermy	Thermic	Relaxation of tissues Hyperemia Relief of pain Attenuation or killing of germs Reflex stimulation
Cold water	Caloric	Contraction of tissues Anemia
Sun Heated metals Carbon arc Mercury vapor arc	Photochemical	Erythema of skin Killing of germs Relief of pain Increase of solid contents of blood
Galvanic current and variations	Electrochemical	Positive pole: Vasoconstriction Acid reaction Negative pole: Vasodilatation Alkaline reaction Interpolar: Metabolic
Interrupted, wave and alternating currents Vibration Massage	Dynamic	Muscle and tissue contraction Increase of venous and lymph flow, stretching of tissues, reflex stimulation

All effects may be mild (stimulation) or exaggerated (destruction), local, general or reflex, according to the intensity, duration, and area of application.

TABLE 2. PARTIAL SCOPE OF PHYSICAL THERAPY

Diagnosis	*Agency*	*Effects*
	CHEST	
Colds Bronchitis Asthma Pneumonia Pleurisy	Light Infrared Diathermy	Relief of pain Improved respiration and heart action
Chronic myocarditis	Same	Same
Chronic pulmonary tuberculosis	General ultraviolet Breathing exercises	Tonic
	ABDOMEN	
Chronic catarrhal conditions of stomach, gallbladder Spastic conditions	Diathermy	Relief of pain and spasm Improved circulation and restored functional activity
Atonic conditions Chronic constipation	Exercising currents Static wave, general and local exercise	Improved nutrition and muscle tone
	FEMALE ORGANS	
Chronic metritis Endometritis Salpingo-oophoritis Functional amenorrhea	Diathermy	Relief of pain Improved circulation and function
Spastic dysmenorrhea	Static wave Diathermy	Relief of vascular spasm
Infantile uterus	Exercising currents	Improved circulation and muscular development
Subinvolution	Static wave	
Cystitis	Diathermy, infrared or radiant light and heat	Relief of pain and tenesmus
	MALE ORGANS	
Chronic prostatitis Chronic gonorrhea Epididymitis Vesiculitis	Static wave Diathermy	Decongestion Relief of pain Attenuation of gonococci Improved circulation
Impotency	Static wave	Stimulation
Cystitis	Diathermy, infrared or radiant light and heat	Relief of pain and tenesmus
	NERVOUS SYSTEM	
Cerebral hemorrhage (hemiplegia)	1. Galvanism to brain 2. Heat, exercise to muscles	1. Promotion of circulation 2. Restoration of muscle function

Paralysis (nerve injury, poliomyelitis)	Thermal measures Exercising currents Active and passive exercises	Same
Neuritis (careful in acute stage)	Heat measures Galvanism Static modalities	Relief of pain and spasm Absorption of inflammatory products
Insomnia Neurasthenia	Static breeze General massage, exercise, hydrotherapy	Sedation, and tonic action
	TRAUMATISM	
Recent injuries	Cold applications Mechanical measures Fixation	Decongestion
Subacute injuries Sprains Traumatic arthritis	Thermal measures followed by mechanical measures	Relief of pain Improved circulation Restored function
Fibrous ankylosis	Local exercise	
Bursitis, subacute and chronic	Diathermy Static brush	Relief of pain and spasm Absorption of inflammatory deposits
	ARTHRITIS	
Acute polyarthritis	Mild local heat measures	Relief of pain
Subacute and chronic polyarthritis	General heat measures Careful exercise	Promotion of metabolism Restoration of function
Chronic infectious, traumatic osteoarthritis	Diathermy and mechanical measures	Relief of pain Improved circulation and restoration of function
Chronic atrophic	Galvanism	Mild stimulation
Tuberculous	General ultraviolet	General tonic
Gonorrheal, subacute and chronic	Diathermy to joints and to focus	Bactericidal Relief of pain
Gouty	Static brush Diathermy	Relief of pain Improved circulation
	METABOLIC	
Essential hypertension	Autocondensation	Relaxing of vascular spasm
Hypotension	Static modalities Oudin current to spine	Reflex stimulation, relief of symptoms
Obesity	Exercising currents or therapy exercise	Promotion of muscular activity and of metabolism
Anemia (secondary) Convalescence	General ultraviolet	General tonic
	SKIN AND SURGICAL	
Chronic skin lesions	Local ultraviolet Electrodesiccation	Superficial destruction
Hypertrichosis	Negative galvanism	Alkaline caustic destruction
Adherent scars	Same	Softening
Moles and warts	Surgical galvanism Electrodesiccation	Superficial destruction
Accessible malignancies (selected cases)	Electrocoagulation	Penetrating coagulation

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MEDICAL DEFENSE AND DAMAGE SUITS *

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The subject of malpractice damage suits and defense of them from its very nature requires the repetition of views expressed by others, and statements often reiterated in relation to the subject. There can be little original in a paper of this sort.

A malpractice suit is very similar to any other tort action. It is an attempt to recover damages for the failure of the defendant to do that which a reasonably prudent, careful and skillful person in his position would have done, or doing that which a careful, prudent and skillful person in his position would not have done under the same conditions and circumstances.

Under the law a person, who offers his services to the community generally or to any individual for employment in any professional capacity as a person of skill, contracts with his employer: (1) that he possesses that reasonable degree of learning, skill and experience which is ordinarily possessed by the professors of the same art or science, and which is ordinarily regarded by the community and by those conversant with the employment as sufficient and necessary to qualify him to engage in such business; (2) that he will use reasonable and ordinary care and diligence in the exertion of his skill and the application of his knowledge to accomplish the purpose for which he is employed; he does not undertake for extraordinary care, or extraordinary diligence, any more than he does for uncommon skill; (3) in stipulating to exert their skill and apply their diligence and care, the medical and other professional men contract to use their best judgment.

This is the law as laid down by Judge Cooley long ago. While certain cases are differentiated one from the other, the law thus announced has never been departed from. In the case of Martin vs. Courtney, 87 Minn., 197, a judge, known for the exactness of his statements and the accuracy of his expression, has put the matter, after repeating the language that I have read, as follows:

> "To exact more than this would be an unjust imposition upon the physician, to encourage expectations of miraculous power that could not be fulfilled, for he is not an insurer of absolute success. The white headstones and monuments that glisten in the sunshine within the sacred precincts devoted to the repose of the dead in the suburbs of every city and hamlet in the land testify with unerring

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certainty that man is mortal, and the most effective efforts of the healing art are incapable of resisting the conqueror of all. The very best results of science recognize this truth. The medical art of late years has made great advances in resisting the ravages of disease, but it has its limitations, and its achievements are still but an approximation to its highest ideals.

"It is perhaps unfortunate for the profession that too much is expected from it. Confidence in the physician by the patient is essential, but it should not be such an unwavering faith in his powers as the superstitious savage gives to his medicine man, or makes success the sole metewand of duty, but rather a sensible and an intelligent trust that expects reasonable efforts, and, when these have been bestowed, submits with Christian resignation to the inevitable; for, 'he censures God who quarrels with the imperfections of man.' The ubiquitous protectorate which jurisprudence extends to all material interests and to every science and to every art takes note of our common fate, with the possibilities of failure in the professional treatment of diseases, and accords the medical practitioner in every case the presumption that he has done his whole duty."

It will be seen from these quotations that a man possessed of the skill, learning and judgment which should be part of the equipment of every doctor, who diligently employs himself to the care of his patient, ought not to be disturbed by suits of this character, but the fact is that false statements will be made relative to what he did and what he said, and relative, also, to the condition the patient was in when he took charge, and the patient's condition from that time on. The fact is that the true conditions surrounding the case and governing it are distorted by ignorant or vicious witnesses, and the doctor's statement is not often believed.

If I can be of assistance to you at all in avoiding trouble, it will be by stating to you what your obligations are and pointing out safeguards which you should throw about yourselves and bear in mind at all times. Nor do I intend to alarm you to such an extent that you shall become possessed of fear and misgivings which destroy your efficiency and weaken your capacity. We must fight fear as we would fight the devil. Fear is a sort of microbe that eats the pep out of the blood; it is a set of hobbles a man puts upon his soul. Growing distrust of his mental and personal ability is a slow paralysis which eventually destroys. But fear is one thing and caution another. What I shall say to you is intended as caution.

There are many rights that you possess that you may not understand. You have a perfect right to refuse to take a case. As one great judge stated, "The doctor may stand by an injured person while his life blood ebbs away and decline him aid. By so doing no legal liability is created. He may refuse to respond to the call of a patient urgently in need of his assistance, even though he is the only physician or surgeon procurable." But if he assumes to take charge of a case, then there is a contract immediately created that the doctor possesses and will exercise that reasonable or average degree of learning and skill which is ordinarily possessed by physicians and surgeons of ordinary and average learning and ability in the same or similar localities to that in which he practices, and he contracts that he will use such reasonable and ordinary diligence in the exercise of his skill and the application of his knowledge to accomplish the purpose for which he is employed, and he further contracts that he will use his *best judgment* in the application of his skill in deciding upon the nature and best mode of treatment. Whether he has done so, in case of suit brought against him, is a question for the jury to determine under legal principles.

If one is a specialist and holds himself out as a specialist in the treatment of a certain line of cases, this man is bound to bring to the aid of one employing him that degree of skill and special knowledge which is ordinarily possessed by those who devote special study and attention to that particular branch. That is the one distinction between the man engaged in general practice as a general practitioner and the specialist who devotes his attention to certain lines of practice and who calls himself a specialist.

Remember, *the highest degree of skill is not required.* The physician does not contract for extraordinary skill, diligence or care. The great majority of physicians and surgeons cannot qualify under that test. On the other hand, the skill possessed by the moderately educated or deficiently educated would be equally unjust to the public, and for that reason the Supreme Court of many of our states has placed the test as the average of the skill and diligence ordinarily exercised by the profession as a whole. To make it easier to prove what that degree of skill and diligence is, the courts have limited the proof to that degree of diligence and skill exercised by other physicians and surgeons in that community or similar communities.

The doctor's skill and diligence must be tested by the doctrines of the school of which he is a member. The law recognizes that there are different schools of medicine, but it does not favor one school to the exclusion of the others. The treatment adopted by the physician is to be tested by the principles and practices of his school, not by those of another school. Some practices, however, are recognized by all schools, such as the avoidance of infection, the safe administration of anesthetics; but with a few exceptions one must be judged in a malpractice case by men of his own general school.

Not only must a physician or surgeon possess and exercise the requisite degree of skill and diligence in his diagnosis and treatment and use his best judgment, but he must keep abreast of the times and adopt new measures approved by the profession. In this also he must use his judgment. If he wander into new fields seldom, if ever, invaded by his profession, he is likely to find himself in trouble. He must proceed cautiously, and be able to show in case his treatment is questioned, that at least a respectable number of members of his profession have entered that field and found it productive of good. The language of Shakespeare may apply. "Be not the first by whom the new is tried, nor yet the last to lay the old aside."

Of all the elements that go toward the protection of the practitioner, it is my view that we should guard most sacredly the principle maintained by most courts that a doctor who exercises his best judgment is not responsible for unexpected results. In all our litigation this principle should be asserted and impressed upon the court with its full significance. The courts have held that a physician with the requisite amount of skill, who exercises his best judgment, is not liable for an error of judgment, as the error must arise from circumstances in which a physician of ordinary skill and knowledge might hesitate. Where there are reasonable grounds of doubt and difference of opinion, the professional man, after the exercise of his best judgment, admitting that he possesses the necessary knowledge, is not responsible for errors and mistakes; he is only responsible for the damage resulting from the want of and the proper exercise of reasonable skill and diligence. Perhaps the best case to express the thought I have in mind is one from Minnesota, wherein Judge Jaggard, now deceased, says:

> "Physicians and surgeons deal with progressive inductive science. On two historic occasions the greatest surgeons in our country met in conference to decide whether or not they should operate upon the person of a president of the United States. Their conclusion was the final human judgment. They were not responsible in law, either human or divine, for the ultimate decree of nature. The same tragedy is enacted in a less conspicuous way every day in every part of the country. The same principles of justice apply. Shall it be held that in such cases, where there is a fundamental difference among physicians as to what conclusion their science applied to knowable facts would lead to, then what they with their knowledge, training and experience are unable to decide, and what, in the nature of human limitations, is not susceptible of certain determination, shall be autocratically adjudged by twelve men in a box, or by one man on the bench, or by a larger number in an appellate court, none of whom are likely to have the fitness or capacity to deal with more than the elements of the controversy? All the court can properly do if an action for negligence should be brought in such a case would be to direct a verdict for the physician. In Williams vs. Poppleton, 3 Ore. 139, 145, Upton, J., said of a charge of negligence in the reduction of a dislocation: 'In cases like this the court and jury do not undertake to determine what is the best mode of treatment, or to decide questions of medical science upon which surgeons differ among themselves.'"

In exercising his best judgment the surgeon is not bound to foresee any unusual or improbable result of his treatment. Improbable things happen, unusual results are sometimes met with, but this is no reason why he should not exercise his judgment. Of course, if a surgeon is called upon to perform an operation which, in his judgment is unnecessary, he is bound to advise against it, whether his opinion is asked or not, and I believe it would be good judgment to refuse to operate even though the patient insists upon it. There is an obvious distinction, however, between the claim of negligence in the choice of methods and the claim of negligence in the actual performance of the work or treatment after such choice is made. As to the first, Judge Ellis, of our own Supreme Court, has said:

> "As to the first, the charge is refuted, as a matter of law, by showing that a respectable minority of expert physicians approved of the method selected, thus taking the case from the jury. As to the second, a charge of negligent performance, where there is any evidence tending to show such negligence, the case is for the jury, as in other cases of negligence, whenever upon the evidence the minds of reasonable men might differ."

For instance, if in the judgment of a physician, a foot should not be amputated, his judgment should control and protect him, but if he has made up his mind not to amputate the foot and later fails to treat it or care for it, the jury may decide that is negligence. The distinction is not always clear but I regret to say that the courts are more apt to err in letting a case go to the jury than they are in taking the case away from the jury upon this ground.

Often a doctor is unable to see the patient frequently; the patient is unable to secure trained nurses and he is cared for during the doctor's absence by his wife, daughter, the wife of a neighbor or someone who claims to be a practical nurse, none of whom have had any experience or training in nursing such cases. These conditions the doctor knows or should know and it is, therefore, his duty to give careful instructions or warnings relative to taking the temperature of the patient, changing of dressings, antiseptic requirements, and diligence to foresee a change for the worse. The doctor may give these warnings, instructions and advice, but the relatives or practical nurse, or all of them, may deny that they received such instructions. It takes but a moment to write the important instructions and warnings upon a pad with a carbon copy preserved. This is necessary because it is a fact that the court will submit to the jury upon the testimony of these people against the testimony of the physician the question whether or not these things were done that should have been done, and the jury is likely to find against the doctor.

To eliminate many of these dangers I caution you as follows:

First: Relative to your records. From day to day it must become more evident to the practicing physician and surgeon that his only safety against malpractice suits, even though he be guilty of no negligence, lies in keeping an accurate record of his treatment of the patient; not only a correct record in the hospital, but a correct office record of all that transpires outside of the hospital, and not only should he keep a correct record, but he should keep an accurate and detailed record both in the hospital and out.

Copies of prescriptions should be kept, frequent roentgenograms should be taken, if an operation is performed, the record should show what was removed, what was mended and what was learned. These records should be made at the time or immediately thereafter and before the matter becomes dim in one's recollection. In practically all of our malpractice cases we find our records are not quite as complete as they should be. The writer has had little occasion to complain of the completeness of the records made by the attending nurse, whether it be the day or the night nurse; these nurses seem to do their work well and carefully; their charts appear to be complete. But the so-called practical nurses are ignorant and some of them will be very glad of an opportunity to join in an effort to recover against the doctor. I might, therefore, add that, in addition to making complete and accurate records, the doctor "keep an eye" on the practical nurse.

Another caution might be suggested, and I approach that question with some misgivings. More frequent consultations should be had, bearing in mind, however, that the patient ought not to be required to pay too many doctors. The consultant ought not to work for nothing. Good judgment should be used, and such judgment ought to indicate when a case is sufficiently serious or the family sufficiently dangerous to require consultation, for the protection of the doctor or the health of the patient.

Second: Wherever possible have pathologic examinations made and records kept. The standardization of our hospitals has done much for you in this department, but they should be checked from time to time, and it may be that your patient is not in a standardized hospital. Your records can nevertheless be made quite complete if you exercise care.

Third: Do not hesitate to call an honorable and able professional man for consultation. You have nothing to fear from the man of honor and high professional standing. Lawyers do this, business men do it, all do it, and as a rule the professional man of high ethics and good moral fibre will thank you for calling him, even if the patient is unable to pay, because it enables him to perform that high duty that he owes to humanity.

Fourth: Secure consent before you operate, and if you have cause for suspicion that the parties are not of good character, require written consent to be signed. In major operations the patient is under complete anesthetic. The physician may discover conditions not anticipated before the operation was commenced and which if not remedied will endanger life or health. In such cases, he may, and perhaps in aggravated cases must remove the newly discovered danger, but it is always wise to get consent to this action, and the surgeon who does not do so is not using that precaution in his own behalf that bespeaks his care in behalf of others. While the pathologic requirements of the hospital, if the patient is in a standardized one, is some protection, the careful surgeon will require still greater protection, because it is a principle of law that one's body is not to be mutilated in any manner except by his consent. There are exceptions. For instance, one may be carried to a hospital in an unconscious condition with no one to speak for him; if not operated upon he may die. But the exception is not the rule.

I do not wish you to believe that it is my view that the physician or surgeon is never at fault. We have lazy doctors as we have lazy lawyers, who neglect their cases as the lawyer neglects his, who fail to keep abreast of the advancement of medical science and skill, as the lawyer fails to read the decisions, who takes his cases in a slip shod manner. If his laziness in attending to the case or his laziness in keeping abreast of his profession results in damage to the patient who places himself in his charge, this doctor should be punished, and the way to punish him, outside of your profession, is to make him pay damages. But the best way to punish him is within your organization. Occasionally a good man is unable to defend himself because he has failed to protect himself by keeping records, and is unable to show what he did do.

The outside causes of suits against doctors are many. People of the present day, without appreciating the fact that a little knowledge is a dangerous thing, read articles found in newspapers, some of them written by advertising doctors, and think from such reading that they know something about medicine and surgery, and they become critical. The smattering of knowledge that they have leads them to become fault-finders and they love to profit by their fault-finding.

Still another cause of trouble is the fake doctor. Never in the history of medicine have we had so many isms in the medical and surgical field. To repeat the scientific names which men and women attach to themselves to fool the public into believing that they have scientific knowledge, would tax one's memory. Many of these affixes or prefixes mean nothing to the educated mind, but mean much to the public. Ignorant people go to these men after they have been ill or have suffered an operation, and they leave, firmly convinced that their former physician or surgeon has ruined them forever. These people cause trouble.

In our ranks we have a little to complain of. Some doctors take delight in conveying the impression to a patient that the doctor who has treated the patient is some manner has failed of his duty. He murmurs to the patient or his friends, and whispers, insinuates, and raises his hands with a horrified expression on his face, as if a crime had been committed, and the patient starts a malpractice suit.

Almost always the patient fails to state the real facts, and the maligner knows this must be so, but he cares not; he has started trouble, and in some manner expects to gain by it. And having started trouble he must see it through, though he commit perjury in doing so.

Of course, no professional man of real character will voice an improper or unjust criticism of any reputable member of the profession, whether he be reputable or not, but some professional men have no real character. Some do not know that the doctor may have had a sound reason for his acts in the case of his patient, but the bearer of false testimony does not investigate. He injects the poison first, and perhaps learns the facts after he has done his work. His notion of ethics is to build for himself a reputation by unjustly destroying the reputation of his associates. True, he never succeeds in elevating himself, but he does succeed in dragging down his worthy competitor.

Living conditions have so greatly improved during recent years, and the expenses of living have so greatly advanced that the relationship existing between the doctor and the public has greatly changed. The impression seems to have gotten abroad that the doctor enjoys luxuries and indulges in extravagancies that no other business or professional man can approach, and many people think that his life is one of ease, and that his professional practice results in great remunerations. This, so far as I have been able to look into the matter, is entirely wrong. I know very few physicians or surgeons of outstanding ability past sixty-five years. Their professional worries and irregular hours demanded of them by their patients have caused the death, before sixty, of more outstanding men in that profession than I believe can be found in five times as large a number of lawyers, bankers, brokers or tradesmen, whose remuneration for their effort is greater. I think, after all is said and done, that the doctor may reach the conclusion that Robert Louis Stevenson was not far afield when he wrote:

> "There are men and classes of men that stand above the common herd, the soldier, the sailor, the shepherd not infrequently, the artist rarely, rarelier still the clergyman, the physician almost as a rule. He is the Flower of our civilization and when that stage of man is done with, only to be marvelled at in history, he will be thought to have shared but little in the defects of the period and to have most notably exhibited the virtues of the race. Generosity he has, such as is possible only to those who practice an art and never to those who drive a trade. Discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Herculean cheerfulness and courage. So it is that he brings air and cheer into the sick room and often enough, though not so often as he desires, brings healing."

NORTHWEST MEDICINE

The Journal of the State Medical Associations of
Oregon, Washington and Idaho

Devoted to the Interests of the Medical Profession
of the Pacific Northwest

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DECEMBER, 1929

EDITORIAL

MENACE OF DERMAL NEOPLASMS

Although organized workers have for years diligently searched for the cause and cure of cancer, all efforts thus far have been baffled. The one unanimously accepted principle of cure lies in early surgical interference with malignant growths as soon as a diagnosis has been established. Almost daily the surgeon witnesses the tragedy of malignancy, where the growth in internal organs has developed to an inoperable stage before recognition. There is no excuse, however, for such deplorable development in malignant growths of the skin. Where the neoplasm is under observation from its incipiency, its progress to an incurable condition is unpardonable and criminal.

Malignant neoplasms of the skin are graphically considered at length by Bloodgood in this issue.* He recites many facts known to every practitioner, ignored by many and unrecognized by others, namely, the possible malignant degeneration of moles, warts and inflammatory lesions which are among the many common skin involvements in the practice of every physician. He states truthfully that every woman who has consideration for her beauty will not develop cancer of her body because she will have removed the possible precancerous neoplasms. If every physician would urge the removal of warts and moles, particularly about the face and neck, the tragic results which often appear in people of middle age and advanced years might be avoided. Many people will harbor these growths for a lifetime in consequence of fear of a knife and the imaginary mutilation. They seem unconscious of the fact that these disfigurements can be removed painlessly and with little or any subsequent scarring when skillfully treated. If one has an unconquerable aversion to the knife, the growth can be removed by radium or the high frequency current in the form of desiccation or coagulation. By this latter treatment the growth is removed at one sitting, with no bleeding, and without pain by the use of local anesthesia, and a minimum of resulting scar. Whatever treatment one may prefer to recommend, more attention should be paid to the ablation of these small neoplasms both for the prevention of possible malignant degeneration and for the removal of the disfigurement which some people retain for a period of years.

CONFERENCE OF SECRETARIES AND EDITORS

The annual conference of secretaries of state medical associations and journal editors was held in Chicago under the auspices of the American Medical Association November 15-16. The northwest state associations were represented by Drs. F. D. Stricker of Oregon, C. H. Thomson of Washington and J. N. Davis of Idaho, secretaries of their respective state associations, and C. A. Smith, editor of NORTHWEST MEDICINE. The program of this annual meeting includes neither papers nor discussions of scientific matters pertaining to medical or surgical practice. Its purpose is to consider subjects promoting the welfare of the medical profession and its various relations to public affairs of state and national character. This aim was illustrated by a paper describing the public activities of the Nebraska state medical association. The author explained the program of his state association at the annual state fair, where space was provided for the medical exhibit. By means of previous well-directed publicity, interest had been generated and large numbers of visitors with much enthusiasm examined the numerous exhibits representing modern advances in scientific medicine and the demonstrations of the association's activities in the promotion of public health and means of advancing public welfare. The author intended this paper as an example of efforts by which the medical profession of a state can excite the interest of the public in the beneficent work which it accomplishes from year to year.

The greatest interest of the conference centered about papers by men from Ohio, West Virginia and North Carolina, dealing with the relations of medical practice to industrial, corporation and state practice. Attention was particularly called to the condition of affairs more or less advanced in all the states, by which the practice of medicine to a large extent is being dictated and controlled by corporations and state industrial boards. While industrial medicine as such commonly involves what is generally known as contract practice, physicians thus employed are becoming more and more dominated by their employers and their individuality is thus being sacrificed. One cannot ignore the fact that combinations of capital are more and more directing all phases of industries, including medical care of their employees. Instances were cited where medical men, supposedly firmly established in corporation employ, were peremptorily notified of radical cuts in salaries, which they could take or leave as others stood ready to accept the reduction.

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* Page 543.

The vital question in a consideration of this topic is whether the medical profession as a body is to be the master of its own destiny or is it to come under the domination of organized interests which will dictate the methods and remuneration of its endeavors. Many physicians will doubtless look upon this ultimate situation as so remote and improbable as to have little concern for them. With many physicians, however, in certain sections of the country it is a real problem at the present time, and where conditions as outlined above are active, physicians concerned are much agitated as to the outcome of future medical practice. While this conference was not in a position to offer a solution of this problem, suggestions were along the lines of organization of the profession with such a degree of consolidation that it would be in a position to conduct its own affairs in a manner to comport with its importance and vital necessity to the public, whether considered in its individual or corporation relations. Such cooperative action may seem visionary and impossible of attainment. It may, however, become a vital necessity in the face of future developments.

The papers and discussions presented before this conference will soon be published in the monthly issue of the *Bulletin of the American Medical Association.* This publication is mailed to all Fellows of the association. Upon its receipt every physician, conscious of the importance of this problem, should read these papers with care and develop his own views regarding the future outcome of this problem.

BENEFITS OF CONSULTATION

Perhaps some members of the medical profession may differ from the opinion of the average layman that "two heads are better than one" when working on a difficult case. For instance, in the building of a large hotel many specialists are called in. The architect would not consider himself competent to install a heating system, but he can help the owner in recommending a company that is efficient in this line. As a consequence, the owner of the hotel is benefited and feels grateful for the help of the architect in suggesting the efficient heating company. Also, the owner has the age-old feeling that the architect is honest because he "does not profess to know everything." Likewise, the patient of a doctor, who calls in a colleague specializing in his ailment, has increased confidence in his physician because he feels that he places the welfare of the patient above his own greediness in keeping a case entirely to himself.

Although some people seem to think there is more jealousy and bitterness in the medical profession than in such professions as the law, engineering or teaching, this condition is not true. Such an opinion has probably arisen because the doctor is more intimately associated with the layman than the practitioner of the other professions. Possibly much of this mistaken impression could be corrected, if the layman saw more of the doctor and the consultant working harmoniously together.

Naturally, when two people sincerely strive together to solve a problem, there develops between them a spirit of cooperation. If the consultant tries to give his expert advice tactfully and if the doctor shows a willingness to listen, there is no reason why a mutual friendliness should not evolve, as well as a better diagnosis and treatment for the patient. As a corollary, the country and the city doctor through the medium of consultation will form a closer union of ideas and friendship. Some doctors practicing in smaller towns and rural districts may have the impression that the city specialist is too busy or too occupied with his own affairs to come out and consult with them. Very likely the country doctor is wholly wrong, but if he is right it is advantageous to the specialist to go with the rural doctor and discover what good work he usually does.

After any discussion of two men working for remuneration on the same case, there follows the problem of the proper division of fees for the labor involved. If the national or state medical societies could calculate and publish a routine system of charges for the consultant, a large part of the danger of misunderstanding and suspicion might be avoided. The doctor seeking advice would grow less apprehensive of a contact which at present is delicate and haphazard, the consultant would have even more reason to keep himself as well informed as possible upon his subject, and a better understanding, a closer unity and a more unselfish purpose would blossom to maturity.

MEDICAL NOTES

OREGON

Hospital Executives Meet. Sixty members of the Western Hospital Association met at the Hotel Multnomah in Portland, Oct. 30-31, for the two day annual convention. Among the speakers were Dr. Malcolm T. MacEachern, medical director of hospital activities of the American College of Surgeons, Chicago, and Dr. Richard P. Dillehunt, dean of the University of Oregon Medical School, Portland. The next annual meeting will probably be held in Seattle, or Vancouver, B. C.

Increased Hospital Facilities Needed. Dr. J. F. Hosch, city commissioner of Bend, in the course of an address made recently before the annual meeting of Deschutes County health association, emphasized the present lack of adequate hospital facilities in Bend and Deschutes county. Not only is there urgent need for a hospital for indigent patients, but there are also insufficient beds at St. Charles hospital to care for private patients seeking admission. He also presented a plan of county-wide diphtheria prevention among school children by means of toxin-antitoxin, the campaign to be started next year.

Emergency Hospital Reopened. The space in the Oakes building at Bandon, which was used as a hospital several years ago, has been remodeled and equipped for a modern general hospital of eight beds. The new institution, to be knowns as the Emergency hospital, is under the management of Drs. H. L. Houston and M. E. Corthell.

Hospital Sold. Dr. R. W. Stearns of Medford recently sold his entire stock in the Community hospital in that city to a group of local citizens who plan to develop it as a general hospital serving the district.

College Physicians Hold Conference. The director of the student health service of Oregon institutions of higher learning held a conference in the office of the state board of health in Portland, October 28. Dr. William Lewis, assistant state health officer, presided. Sanitation and the control of communicable diseases were among the topics discussed.

Portland City and County Medical Society met in the Auditorium of the Medical-Dental building in Portland, Nov. 6. A symposium on the treatment of pneumonia was presented by Drs. C. D. Bodine, F. B. Freeland and Merl L. Margason.

Dr. W. A. Cartwright, formerly of Spokane, Wash., has moved to Gold Beach, Ore., where he will engage in practice.

Dr. C. M. Harless has established an office in the hospital at Enterprise.

Dr. Dean Crowell, who for the past five years has been engaged in the practice of general surgery at Albany, has moved to North Bend, and is now associated with Dr. Keizer in the operation of the Keizer hospital.

WASHINGTON

Medical Building to Be Enlarged. Announcement was made recently of plans to construct immediately an eighteen story addition to the Medical and Dental building at Times Square in Seattle. When the new structure is completed next July, the enlarged building will provide for more than eight hundred and fifty offices and will rank among the largest professional buildings in the country.

Hospital Bond Issue Proposed. A bond issue of $50,000 for construction of an addition to Oakhurst Sanatorium was to be submitted to the voters of Grays Harbor county at the date of the next general election, Dec. 7. The amount of the bonds has been reduced to one-half of the sum originally proposed. The board of commissioners of the sanatorium are said to have withdrawn opposition to the plan, in view of the reduction in the amount asked for.

Hospital Annex Planned. Work is to be started in the near future on a $200,000 addition to the Eastern Washington State hospital at Medical Lake. It will provide accommodations for one hundred and fifty patients.

Clinic Building Planned. Contracts have been awarded for the construction of a modern one-story clinic building for Drs. W. C. Taylor and J. P. Richardson and their associates at Ellensburg. The new structure will contain thirty-five rooms and will be used for office purposes.

Library Opened by Homecoming. The new library of the Spokane City and County Medical Society was opened Nov. 30 by a homecoming celebration. In conjunction with this there was held a clinical session to take the place of the biennial sessions formerly conducted by the Spokane Clinical Society. Among the guests who held clinics or round table discussions were Drs. Robert C. Coffey of Portland, C. F. Eikenbary and Frederick M. Epplen of Seattle.

Doctor's Painting Honored. An oil painting by Dr. F. W. Southworth, Tacoma physician, has been selected for reproduction on the cover of an early number of the Literary Digest. The painting depicts a tide flate scene at Tacoma. The same magazine honored Dr. Southworth in a similar manner several years ago.

Tacoma Surgeon Honored. Dr. Horace J. Whitacre of Tacoma was nominated a member of the board of governors of the American College of Surgeons at the recent meeting of that organization in Chicago.

Pathologist Appointed. Dr. Herbert Foskett of Portland has been named pathologist to the new Clark General hospital at Vancouver.

President Elected. Dr. H. W. Bortner of Everett has been elected president of Snohomish county medical society for the ensuing year.

Dr. G. W. Overmeyer, who has practiced for a number of years at Chehalis, has moved to Carson where he will be connected with Shipherd's Hot Springs on the north bank of the Columbia River, about sixty miles from Portland.

Dr. E. L. Wilson, retired army physician of Seattle, is convalescing from an acute attack of heart disease, which occurred last month while he was serving as a witness in a war risk insurance suit in the Federal court at Portland, Ore.

Dr. Howard Keyes, son of Dr. W. C. Keyes of Bellingham, sailed Nov. 16 for Austria, where he will engage in postgraduate study. He graduated from the medical department of the University of Buffalo in 1928.

Yakima Valley Medical Society members, as well as guests from the Walla Walla and Wenatchee districts, were the guests of Dr. W. C. Taylor, president of the society, at a special meeting and entertainment held in Ellensburg Dec. 9.

Dr. P. G. Gale, who has practiced at Klickitat, has moved to Vancouver, Wash., where he will be associated in practice with Dr. A. W. Stevenson.

Dr. George B. McCulloch, veteran Seattle pediatrician, is confined to the Firland Sanatorium near Seattle.

Dr. H. A. Greiner, of Seattle, is convalescing from a severe illness which necessitated his removal to the Virginia Mason hospital.

Dr. R. G. Kelley, formerly of New York, has opened an office at Enumclaw.

Grays Harbor Medical Society recently announced plans to conduct a series of health talks from the local radio station.

Medical Weddings. Dr. Terrence Dawson, son of Dr. John T. Dawson of Seattle, was married Oct. 3 to Miss Sella Heflin of Omaha, Neb. The wedding took place in Omaha. Dr. Austin G. Friend of Seattle and Miss Evelyn Garrick of New Westminster, B. C. were married in that city October 22.

IDAHO

Hospital Under Construction. A portion of the Eccles hotel at Blackfoot is being remodeled for the purpose of establishing a small private hospital. Dr. W. W. Beck will manage the new institution.

New Hospital Opened. The new Memorial Park hospital at Caldwell was formally opened Nov. 12. It is of the bungalow type in architecture and provides modern conveniences for twenty-two patients. Local physicians financed the project with the aid of business firms in Caldwell. Mrs. Grace Milliner is superintendent.

Medical Missionary Returns. Dr. William Chisholm, formerly a student at the College of Idaho and now a medical missionary at Syen Chun, Korea, was a recent visitor at Caldwell.

Dr. A. B. Poppenhagen, formerly of Chicago, Ill., has located in Orofino, where he is associated in practice with Dr. R. T. Hopkins.

Dr. J. B. Kenagy of Rupert left last month for St. Louis, Mo., where he will engage in six weeks postgraduate study.

Dr. H. W. Shryock of Seattle, Wash. is acting as locum tenens for Dr. Dunlap of Craigmont, during the latter's absence for four months.

Upper Snake Valley Medical Society held a meeting, followed by a dinner at the Manhattan Cafe in St. Anthony Oct. 21.

OBITUARIES

Dr. Harry Thornton D'Arc, Mount Vernon, Wash., died suddenly in his office Oct. 12, aged 49 years. He was born in 1880 in Canada, and graduated from the University of Toronto Faculty of Medicine, Toronto, Ont., in 1908. After practicing three years in Alberta, he spent a year in postgraduate study at Edinburgh and London. He located at Mount Vernon in 1915 and practiced there until his death. He was prominent in medical and civic affairs in the community, being one of the originators of the plan for the establishment of a hospital at Mount Vernon. He was at one time president of the Skagit county medical society, and held the rank of major in the army medical reserve corps.

Dr. Harry A. Saunders, Wenatchee, Wash., a pioneer physician and prominent citizen of the Wenatchee valley, died at a local hospital Oct. 24 following a brief illness, aged 64 years. He was born in Oneida county, New York, in 1865, and graduated from the University of Nebraska College of Medicine, Omaha, in 1894. After practicing several years in Iowa he moved to Wenatchee in 1902. At the end of twelve years he retired from practice and had since devoted himself to the operation of his orchard property. He was for several years manager of the Wenatchee Southern railway.

Dr. Scott Percy Woodin, Seattle, Wash., died suddenly at his home Nov. 12, aged 67 years. He was born in Jamestown, N. Y., in 1862, and graduated from the University of Michigan Medical School, Ann Arbor, in 1886. He had practiced in Seattle since 1887. He was one of the pioneer physicians in the Northwest in the use of x-ray and had suffered severe malignant infection as a consequence.

Dr. Ira A. Nelson, Northport, Wash., died in a Colville hospital Oct. 28, following a prolonged illness, aged 57 years. He was born in Indiana in 1873, and graduated from University of Nashville Medical School, Nashville, Tenn., in 1902. He practiced several years at Tekoa and at Seattle and later moved to Canada. During the world war he served with the Canadian army overseas as a captain in the medical corps until the United States entered the conflict, when he joined the medical corps at Camp Lewis, Wash. He was also a veteran of the Spanish-American war. He had practiced at Northport since 1925. A brother, Dr. J. A. Nelson, of Tekoa, survives him.

Dr. Frank Wesley Brooks, Portland, Ore., died at his home Oct. 11, aged 77 years. He was born in Knoxville, Ill., in 1852, and moved to Portland during his early manhood, where he entered the drug business. Later he attended the University of Oregon Medical School, graduating in 1896. He practiced in Portland until 1919, when he was forced by ill health to retire.

Dr. George W. Wimberly, Toppenish, Wash., died at his home Oct. 26, following a long illness, aged 54 years. He was born in 1875, and graduated from George Washington University Medical School, Washington, D. C., in 1902. For ten years he was attached to the medical department of the Indian service, part of his time being spent at Tempe, Arizona, and at Fort Simcoe. He had practiced for the past eighteen years in the Yakima valley, and since 1917 had been located at Toppenish.

Dr. A. F. O. Nielson, of Burley, Idaho, died Nov. 3 from internal hemorrhage, aged 61 years. He was born in Copenhagen, Denmark, Oct. 25, 1868. He came to Salt Lake City in childhood. At the age of twenty-one he moved to Oakley, Idaho, where he lived until moving to Burley two years ago. In his early years he taught school, and received his medical degree from the University of Chicago. Besides being county physician, he was one of the board of directors of the Blackfoot Hospital for the insane. He took an active part in county and city affairs besides having a large practice in the southern part of the state.

Dr. David De Beck, Seattle, Wash., one of the pioneer specialists in diseases of the eye in this locality, died Nov. 18, aged 74 years. He was born in Covington, Kentucky, in 1855, and graduated from the Medical College of Ohio in 1881. Following his graduation he spent several years in Cincinnati, where he became professor of ophthalmology in the Medical College of Ohio. He located in Seattle thirty-five years ago and practiced there until his retirement several years ago. He contributed widely to medical literature of his specialty and was made an honorary member of several foreign societies.

REPORTS OF SOCIETY MEETINGS

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., B. T. King; Secty., H. L. Goss

A general meeting of King County Medical Society was held in the Medical-Dental Building, Seattle, November 4, with President B. T. King presiding. Minutes of the previous month were read and approved.

An amendment to the By-laws dealing with annual dues had its second reading, the same being explained by President King. After discussion the amendment was adopted without opposition.

A resolution was voted expressing best wishes and sympathy to Dr. George B. McCulloch in his disability and illness.

Dr. C. F. Davidson read a paper, "Insulin as a Tonic." It was based on experimental work consisting of studies on secretions of the stomach, pancreas and liver, together with the motility of stomach and sensations associated therewith after administration of insulin. Indications for such use of insulin are lack of desire for food, especially when not referable to other diseases, and undernutrition. Its clinical use as a tonic consists of hypodermic medication preceding meals.

Dr C. F. Davidson also presented a case of acromegaly, with a review of the history and symptoms. The case illustrates the influence of pituitary extract on metabolic rate and carbohydrate metabolism.

Dr. H. C. Naffsiger of San Francisco read a paper on "Diagnosis of Brain Tumors," accompanied by illustrations. Diagnosis is restricted to cases in which symptoms and findings are explainable on the basis of a single, progressing and space consuming lesion. Typical clinical pictures of single expanding lesions are acoustic neuromas and growths in and about the pituitary gland. Methods of localization of a tumor were described. Cases were presented showing anatomy of the ventricles, basal cisternae and subarchnoid spaces. Slides were exhibited showing pathologic changes in the skull.

The Medical Section of the society held its monthly meeting Nov. 11, Dr. George C. Miller, chairman.

Dr. Andrew C. Ivy, professor of physiology, Northwestern University of Chicago, read a paper "The Physiology of the Gallbladder, Related to the Etiology of Its Disease." The discussion was confined to research on the gallbladder. The essayist has sought for the hormone that would produce contraction and evacuation of the gallbladder. This has been discovered and named by Dr. Ivy cholecystokinin. The stomach also contains it in small quantity. Physiologic hydrochloric acid injected into the duodenum also causes contraction and evacuation of the gallbladder. Moving pictures illustrated the action of this hormone in a dog. Dr. Ivy stated that the clinical value of this discovery is of little direct use as the same result can be produced by the ingestion of egg yolks. Various experiments were described featuring the effect on gallstones by the administration of various fats and oils. Pregnancy is a strong predisposing factor in the formation of gallstones. There is evidence that cholecystitis is caused by reverse peristalsis and stasis in the duodenum.

PIERCE COUNTY MEDICAL SOCIETY

Pres., C. F. Engels; Secty., W. B. Penney

The regular meeting of the Pierce County Medical Society was held in the Washington Building, Tacoma, November 12, Dr. C. F. Engels in the chair. The transfer of Dr. A. C. Leslie from the Snohomish County Medical Society was accepted.

PROGRAM

"Nonsurgical Treatment of Fibroids, With Special Reference to Treatment by Irradiation," Dr. V. E. Crowe. Indications were presented for use or irradiation in fibroids of the uterus very thoroughly. The paper evoked considerable discussion by Drs. Sidney MacLean, W. B. Penney, C. Quevli, Jr., S. M. Creswell, C. R. Fishel and W. B. McCreery.

Dr. W. Weldon Pascoe presented a paper on "Fibroids from the Surgical Standpoint." This covered the surgical indications for treatment and was discussed by Drs. J. A. LaGasa, S. S. Jones, H. J. Whitacre and W. B. McCreery.

Dr. C. C. Leaverton made a report for the Publicity Committee and outlined their plans for making a contract with an advertising agency to carry on a program of public health education through the daily papers of Pierce County. He stated that this plan had received the unanimous approval of the Board of Trustees and of every member of his committee. He said that the carrying out of the plan would depend on the voluntary subscriptions of members of the society and that about $5,000.00 would be necessary. Dr. Leaverton then made a motion that this plan be approved by the society and that the committee be authorized to get the necessary funds by subscription. A great many questions were asked Dr. Leaverton and a general discussion followed, after which the motion was unanimously carried.

WALLA WALLA VALLEY MEDICAL SOCIETY

Pres., J. T. Rooks; Secty., C. J. Johanneson

Walla Walla Valley Medical Society held its monthly meeting at the Marcus Whitman Hotel, Walla Walla, Nov. 12. There was a large representation of the members of the society as well as from the local dental society.

Dr. R. C. Coffey, of Portland, delivered an address on "The Rational Present Day Treatment of Cancer," in which he discussed the methods of growth and development of cancer, contrasting the malignant with benign tumors. His address was illustrated with lantern slides.

Dr. G. W. Swift, of Seattle, discussed "Later Developments in Surgery of the Brain." He referred especially to various types of brain tumors, their diagnosis and treatment, the address being illustrated with lantern slides.

Dr. Frederick Epplen, of Seattle, discussed "Parkinsonian Syndrome Following Epidemic Encephalitis." The address was illustrated with moving pictures. He presented pathologic specimens from King County Hospital.

Dr. H. E. Cleveland, president of the state medical association, spoke on the annual meeting to be held next August in Bellingham, urging all members to be present at the meeting.

BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

Diseases of the Chest and the Principles of Physical Diagnosis, by George W. Norris, M.D., Professor of Clinical Medicine in the University of Pennsylvania, and Henry R. M. Landis, M.D., Professor of Clinical Medicine, University of Pennsylvania; Director of the Clinical and Sociological Departments of the Henry Phipps Institute of the University of Pennsylvania, with a chapter on the Transmission of Sounds Through the Chest, by Charles M. Montgomery, M.D., and a chapter on the Electrocardiograph in Heart Disease, by Edward Krumbhaar, Ph.D., M.D. Fourth Edition, Revised. 954 pp. with 478 illustrations. W. B. Saunders Company, Philadelphia and London, 1929. Cloth $10.00 net.

Since the last revision in 1924 of this standard textbook on diseases of the chest, bronchoscopy has probably been the greatest addition to our diagnostic means in affections of the bronchi and lungs. While there is no attempt to describe the technic of this invaluable method of examination herein, the indications for its use are very briefly and clearly discussed by Dr. Louis H. Clerf. As is pointed out, in order of importance in diagnosis of lung conditions, the physical examination comes first, then roentgen studies and laboratory work and, finally, in obscure cases bronchoscopy.

In bronchial obstruction bronchoscopy can definitely locate the site and usually enable a correct diagnosis of the cause to be made whether by foreign bodies, granulation tissue, secretions, tumor or extrabronchial causes. Biopsy will solve the nature of tumors and in this way the reviewer has discovered several cases of primary carcinoma of the bronchus. Cough, dyspnea and hemoptysis of obscure origin should suggest bronchoscopy. All cases of lung abscess should be first treated by bronchoscopy, and in fact all cases of lung suppuration, in which bronchoscopy is the only accurate diagnostic method and often equally valuable in treatment. It is so difficult to distinguish bronchiectasis from multiple lung abscess, and the two so frequently are practically identical, that lung suppuration is a convenient and not unscientific term. Combined with injections of iodized oil, to aid roentgen examinations, bronchoscopy is certainly of inestimable value in diagnosis and treatment, and more than two pages in this work might have been profitably allotted to it. Also in the articles on special diseases of the lungs it would be advisable to note the value of the bronchoscope in diagnosis, as in asthma, where Jackson first emphasized the not rare occurrence of foreign bodies as a cause in children.

It is stated that the term bronchial asthma cannot be restricted to those on whom evidences of protein sensitization can be elicited, and that the pendulum is now swinging back to nasal factors as of great etiologic importance. These include especially nasal polyps and sinusitis, with turbinate hypertrophy and septal contact. In sinusitis we often have bronchitis as well. It has seemed for a long time to the reviewer that the long accepted etiologic factors are of chief importance. The cure of a sinusitis or removal of nasal polyps will almost always cure asthma. Food as a factor may be ruled out in most cases in persons over forty. Heat and cold play more importance, as pointed out by Duke, as allergic factors in asthma than usually attributed to them. In fact, they are usually not mentioned and not in this book. Hemorrhage is noted as one of the chief symptoms of bronchiectasis but perhaps it is not generally appreciated that, excluding pulmonary tuberculosis, bronchiectasis is the most common cause of hemoptysis.

It would appear very appropriate that diseases of the lungs and heart should be described in the same volume but as a matter of fact the lung specialists as a whole know very little of the heart, as was seen in army tuberculosis boards. This superficially seems passing strange but in practice the symptoms of heart and lung troubles are so different that heart patients do not come to lung specialists. As the authors of this work are both rarely able internists, they are authorities on both the heart and lungs.

There is but a paragraph on the small heart. It would seem well to considerably amplify this subject, as Greene has so forcibly shown in his Medical Diagnosis and many articles, emphasizing the great frequency of the drop heart and its enormous importance as a cause of disability under stress and strain in the army and in civil life. The reviewer saw hundreds of such cases in the army.

The authors divide acute bacterial endocarditis into septic and subacute, the latter being practically always grafted onto an old rheumatic endocarditis. It seems simpler to classify acute bacterial endocarditis as primary, due to S. viridans and rarely gonococci, and secondary (septic) due to such infections as puerperal sepsis, pneumonia and wound infection, with various types of streptococci and staphylococci, and often not discovered during life, owing to the overshadowing primary infection.

The fact that subacute bacterial endocarditis is almost always a fresh infection superimposed on an old valvulitis, as stated by the authors, is of great value in diagnosis and should prevent many mistakes frequently made in practice. Immobility is noted as characteristic of one suffering from angina pectoris and yet occasionally patients may become very restless in their movements. It is superfluous to describe this admirable textbook and only necessary to add that it has been brought thoroughly up to date and is more excellent than ever before. Winslow.

An Introduction to the Study of the Nervous System. By E. E. Hewer, D.Sc. (Lond.). Lecturer in Histology and Assistant Lecturer in Physiology at the London (Royal Free Hospital) School of Medicine for Women and G. W. Sandes, M.B., B.S. (Lond.), M.R.C.S., L.R.C.P. Demonstrator in Anatomy at the above School, Surgical Registrar to the London Loch Hospital for Women and Children, etc. 104 pp. $6.50. The C. V. Mosby Co., St. Louis, 1929.

This admirable book is divided into two parts, the first containing a description of minute nerve anatomy, a chapter on the cerebrospinal fluid and one on the auto-

DR. ROBERT C. COFFEY CLINIC AND HOSPITAL

New brick and tile buildings have recently been constructed and equipped for the joint occupancy of the DR. ROBERT C. COFFEY CLINIC and the PORTLAND SURGICAL HOSPITAL. The facilities and privileges of the Hospital are limited to the practice of the Clinic and recognized specialists in Urology, Neurology, Cardiology and Internal Medicine who are acting as independent consultants to the Clinic.
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HEMATURA AS SYMPTOM OF PREGNANCY HYDRONEPHROSIS. C. N. Swanson, Detroit (*Journal A. M. A.* Nov. 16, 1929), has had the opportunity to observe and treat a patient with a marked hematuria which persisted during the last four months of pregnancy and the first two weeks of the puerperium, in whom no pathologic change other than hydronephrosis could be detected after several careful urologic examinations. It would seem that serious disease of the genitourinary tract has been eliminated as a possible explanation for the hematuria in this patient, and that a blood dyscrasia has been ruled out equally well. Whatever hypothesis may be offered cannot be substantiated, but one is led to believe that the blood vessels (capillaries) in the kidney pelvis must have undergone some temporary alteration (passive congestion), which made them permeable to blood cells over a considerable period of time, while the definite time relationship to gestation suggests that the pregnancy was actually a causal factor. The occurrence of hematuria with hydronephrosis, especially during pregnancy, in both mother and daughter suggests that this peculiarity may have been directly transmitted.

nomic nervous system; the second part deals with neurophysiology. An appendix contains some histologic methods for the examination of nerve tissue. The book does not treat of neurology, neuropathology nor the gross anatomy of the nervous system.

In their preface the authors state that brevity and clearness have been their objects and in this they have succeeded. The diagrams, although many of them are small, are really remarkable for their clarity. Wherever different colors would help to indicate the various nerve tracts, they have been freely used. Diagrams meriting special mention are the ones showing basal ganglia and cerebellar connections and the relative positions of important fibres in internal capsule and midbrain. Like most medical books written by Englishmen the text is excellent.

While the scope of this work is limited, it is unique in its special field and should be invaluable to the medical student for a correlation of anatomic and physiologic facts acquired during the first and second years, as he approaches the study of neurology in his junior and senior years; also to the physician intending to specialize in neurology. Nor would this book be out of place on the shelf of the specialist, as in it a possible forgotten tract could be quickly located and traced without recourse to ponderous volumes. PRICE.

PRACTICAL LOCAL ANESTHESIA and Its Surgical Technique. By Robert Emmett Farr, M.D., F.A.C.S., Minneapolis. Second Edition, Thoroughly Revised. Illustrated with 268 Engravings and 16 Plates. 611 pp. $9.00. Lea & Febiger, Philadelphia. 1929.

The author presents his subject in three parts, the first dealing exhaustively with factors affecting the use and efficiency of the method, such as the psychic preparation of the patient; favorable instruments and equipment; the various anesthetic agents; methods of inducing anesthesia in infiltration, conduction, sacral, venous, arterial technic. He stresses the need for gentle surgery and respect for the tissues. The many advantages of local anesthesia are pointed out in great detail. Included in this part is an admirable chapter on the anatomy of the sensory nervous system with plates, charts and concise descriptions.

The second and third parts are devoted to the actual applications of local anesthesia to every portion of the body, each operation being taken up in detail, not neglecting a short discussion on the nerve supply to the part under discussion. Case histories are presented; illustrations and actual photographs taken during the course of the operations are abundant. For the surgeon wishing to refresh his interest down to the lowly bunion operation, this book will prove stimulating. D. W. JOHNSON.

THE NUTRITION OF HEALTHY AND SICK INFANTS AND CHILDREN. For Physicians and Students. By E. Nobel, Professor of the University and First Assistant; C. Pirquet, Late Professor of the University and Director; R. Wagner, Associate Professor and Second Assistant of the Children's Hospital of the University of Vienna. Second Revised Edition with 78 Illustrations (Including Charts) and 6 Tables. 243 pp. $3.50. F. A. Davis Co., Philadelphia, 1929.

Professor Pirquet at Vienna has evolved a nutritional system for which he has coined an entirely new nomenclature. For instance, nutritional requirements are determined from a square of the sitting height, thereby giving the "nutritional surface." He uses human milk as the unit of nutrition and applies the name "nem" to the nutrition supplied by one gram of human milk. This replaces the calorie in the system in use in this country.

The practical part of the book takes up the nutrition of the normal as well as of the sick infant and child. Case histories, graphic charts and illustrations accompany to make this a very excellent review of the etiology and treatment of nutritional disturbances. The nutritional management of the infectious diseases, myxedema, cyclic vomiting, epilepsy, diabetes and obesity as well as others are discussed separately.

However, in discussing treatment throughout his book, the new nomenclature is used, and it is entirely necessary to study the first part of the book and master this nomenclature in order to fully appreciate it. They have found this to be successfully used in Vienna Children's hospital, but to the reviewer it seems quite complicated and not likely to be universally adopted. For this reason, the book will probably not be widely read except by specialists in infant and child nutrition. REMBE.

APPLIED ELECTROCARDIOGRAPHY. An Introduction to Electrocardiography for Physicians and Students. By Aaron E. Parkonnet, M.D., F.A.C.P., Attending Physician and Cardiologist Beth Israel Hospital, Newark, N. J., and Albert S. Hyman, A.B., M.D., F.A.C.P., Associate Physician and Cardiologist, Beth Israel Hospital, etc. With 120 Illustrations, 206 pp. $4.00. The Macmillan Co., New York, 1929.

This book is a good book for those beginning the study of this important diagnostic and prognostic aid in cardiology. It is not intended for those already advanced in this field but for those who are beginning this work or the general practitioners who wish to familiarize themselves with the value of electrocardiography. It is easily readable. The site of the abnormal phenomena in the tracings, however, should be indicated in such books, as it is difficult for the uninitiated to pick these out readily. The book intended for the general practitioner could contain more appertaining to the clinical value of electrocardiography. It is one of the best publications for the purpose intended and should be read by every practitioner. DRTINA.

THE MEDICAL RECORD VISITING LIST FOR 1930. Contents: Calendar, July 1929-June 1931. Estimation of Probable Duration of Pregnancy, Approximate Equivalents of Temperature, Weight, Capacity, Measure, etc. Maximum Adult Doses by the Mouth, in Apothecaries' and Decimal Measures. Drops in a Fluid Drachm. Solutions for Subcutaneous Injection. Solutions in Water for Atomization and Inhalation. Miscellaneous Facts. Emergencies. Artificial Respiration. Signs of Death. Hints on the Writing of Wills. Table of Signs. Visiting List and Special Memoranda. Consultation Practice. Obstetric Engagements. Record of Obstetrical Practice. Record of Vaccination. Register of Deaths. Nurses' Addresses. Addresses of Patients and Others. Cash Account. Prices for 30 patients per week, $1.75; for 60 patients, $2.00; for 90 patients, $2.50. Name stamped in gold, 25 cents extra; name and address, 50 cents extra. William Wood & Co., New York

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Dr. Solomon Strouse, Associate Professor of Medicine at Rush Medical College, in his address at the New York Academy of Medicine, as quoted by the *Evening World,* said: "I am beginning seriously to wonder whether scientific efforts at diet control based on animal experiment are not overshooting the mark; whether we are not interpreting the life of a caged white rat rather too seriously for the comfort of a free white man." He went on to say that "food and food habits in general play no important role in the attainment of longevity. . . . Despite much that I read of the evils of the modern way of eating and living, I find in actual practice comparatively few examples of excessive food indulgence to the point of harm. . . . It is possible to conceive of undernutrition causing more trouble than overeating."

The trend of modern dieting thought is that human beings should not only eat a variety of healthful foods, but enjoy them. It is a well-known fact of human psychology that few people will force themselves very long to eat foods that they do not like. As a food scientist says, "It is sugar which makes it possible for us to eat and enjoy the roughage foods, the vitamine foods, and foods rich in mineral salts." Fruit flavors are developed by sugar. Sugar facilitates the ingestion of fruits, cereals and vegetables.

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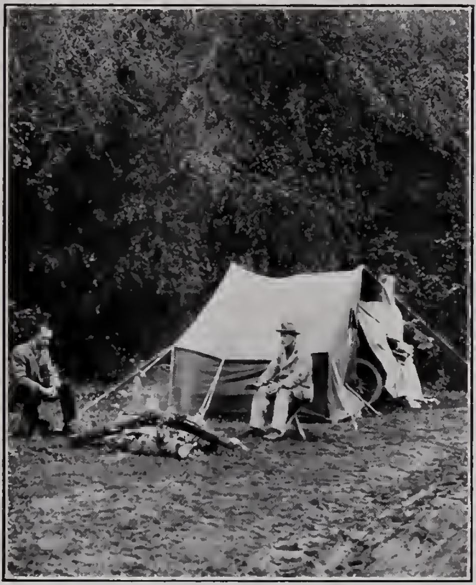

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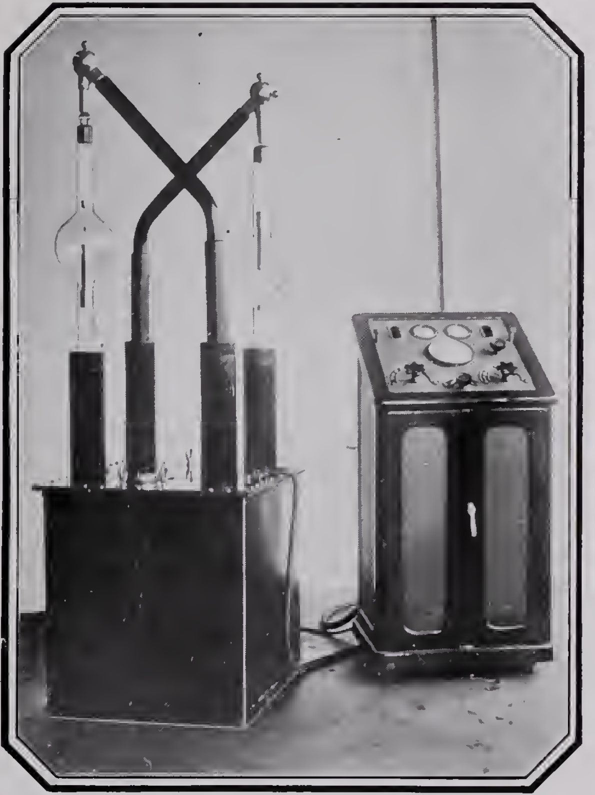

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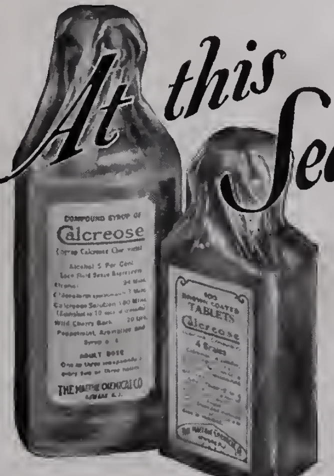

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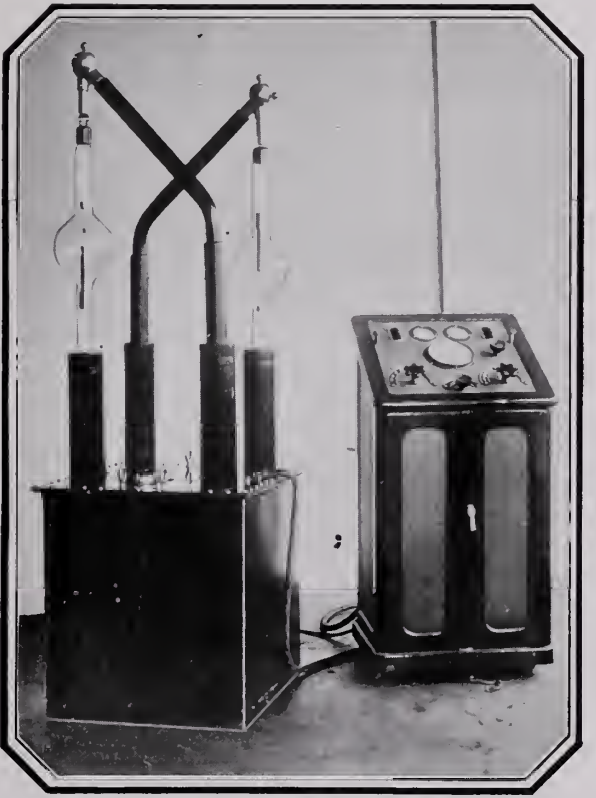

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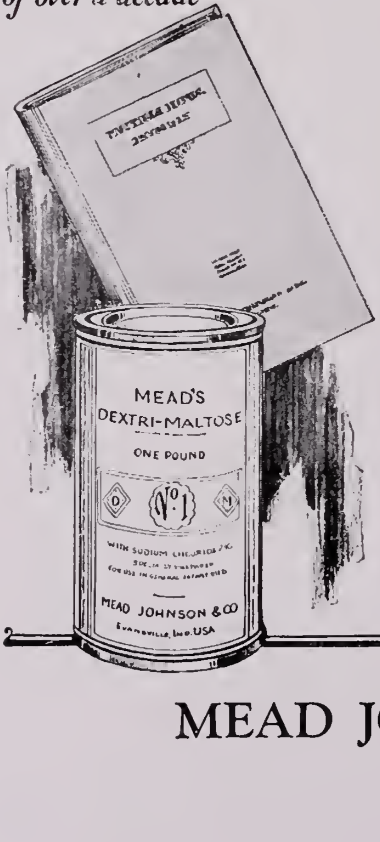

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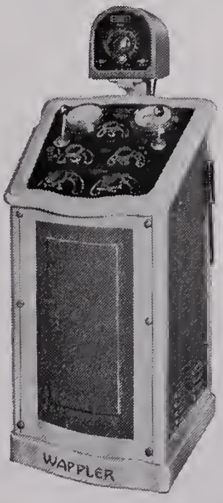

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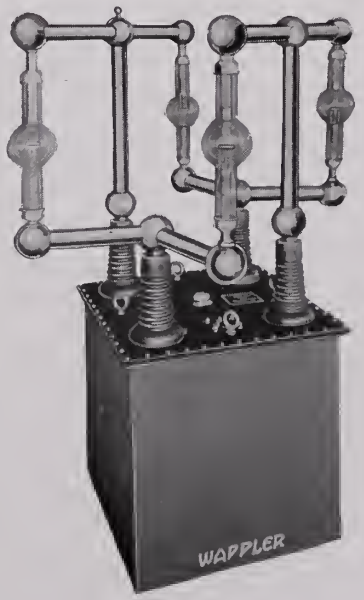

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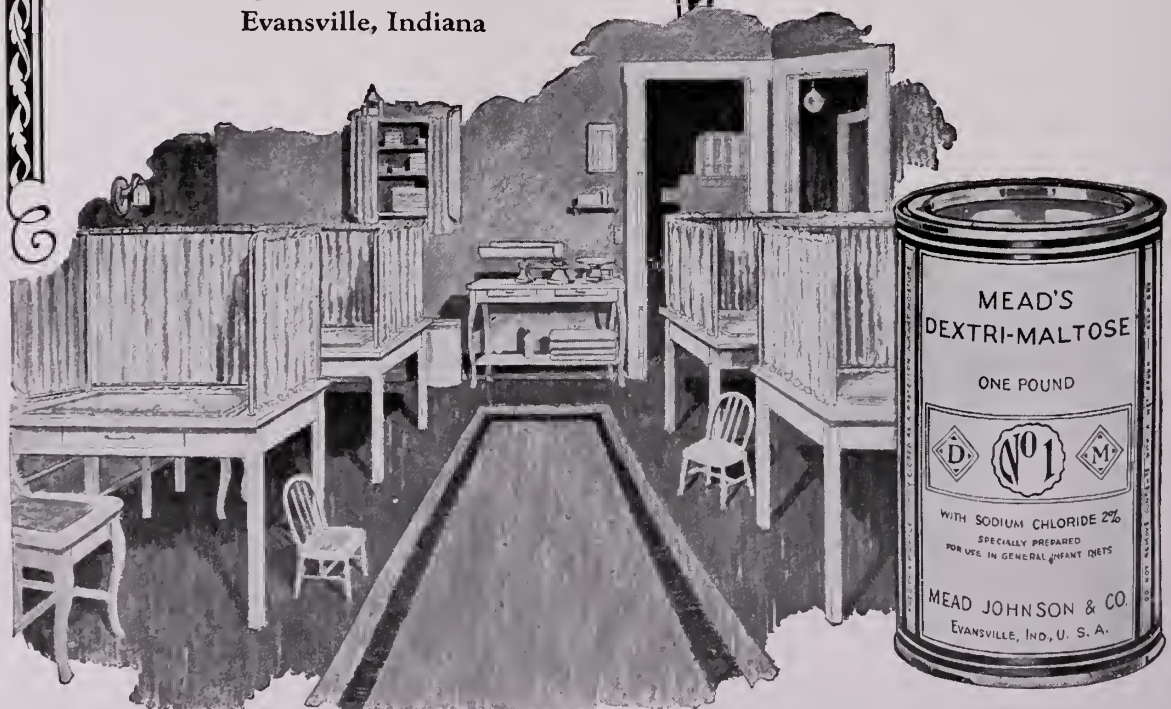
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Calcreose is the "stand-by" of many physicians when they require an intestinal antiseptic embodying the effectiveness of creosote.

Every physician reader of this Journal who is not familiar with the value of Calcreose in the treatment of enteritis and other intestinal disturbances during the summer months is invited to clip out and return the bottle opposite for liberal, complimentary test.

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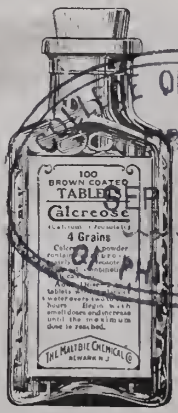

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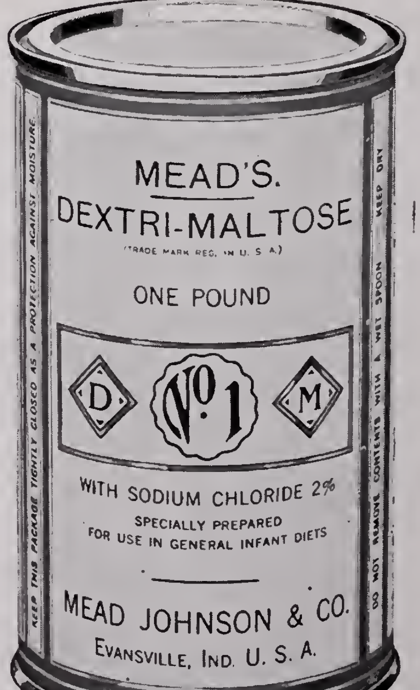
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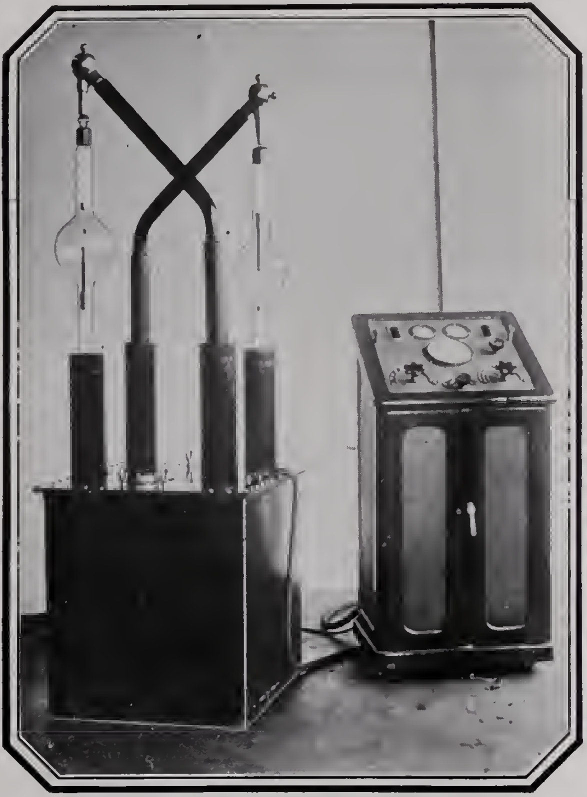

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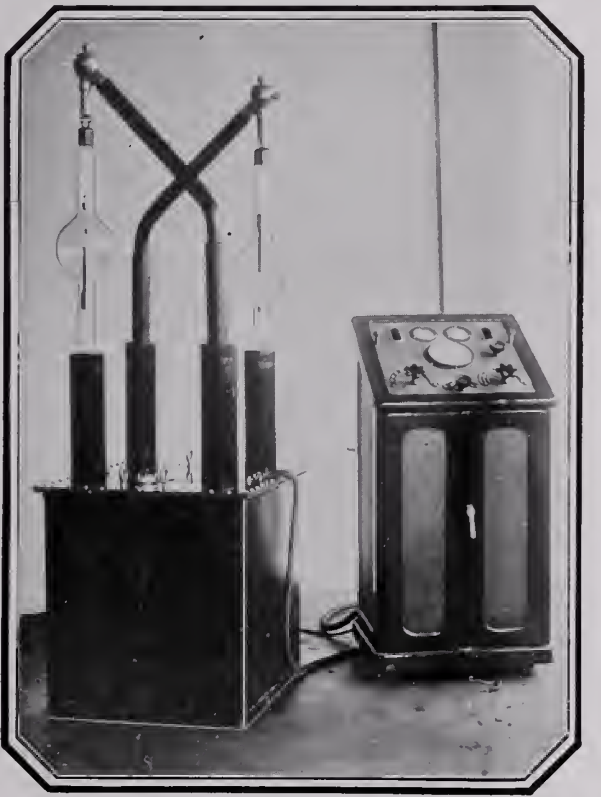

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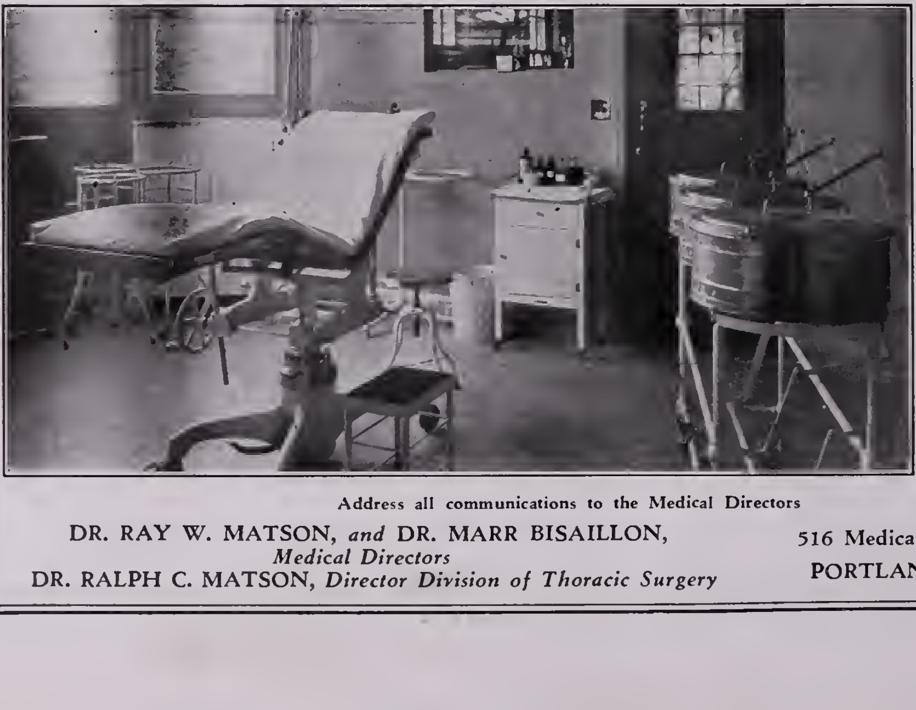

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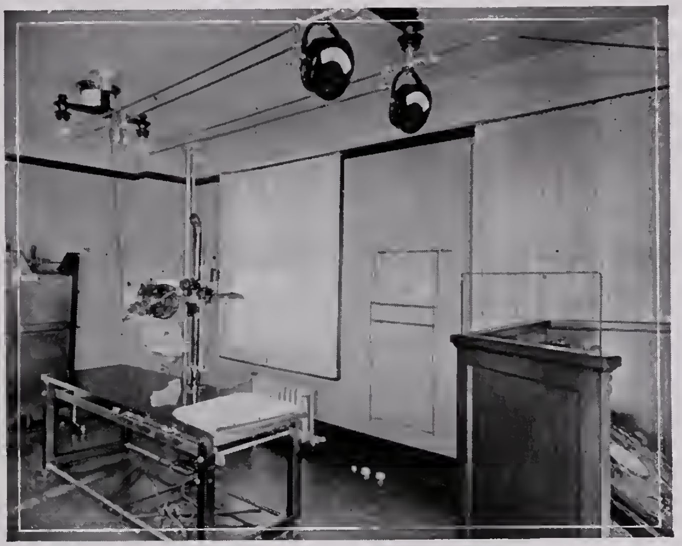

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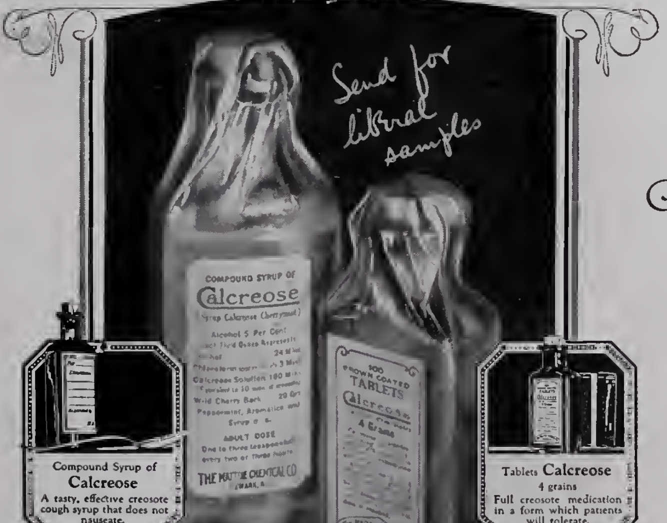
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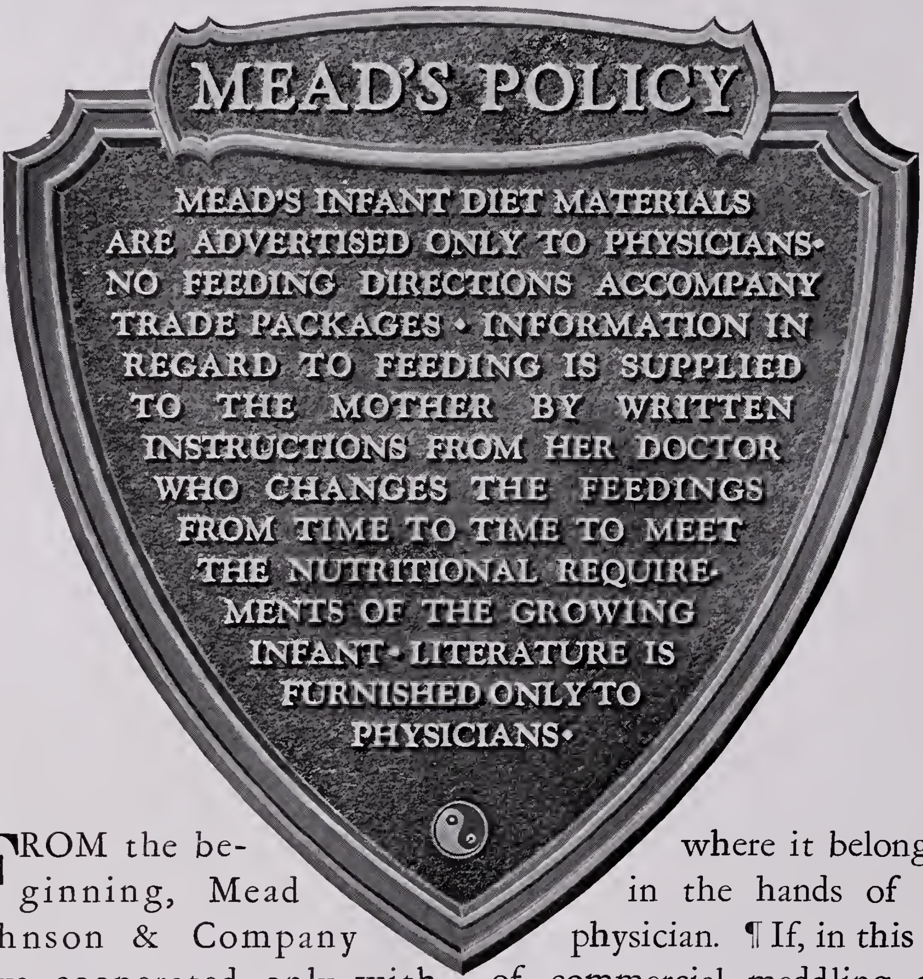

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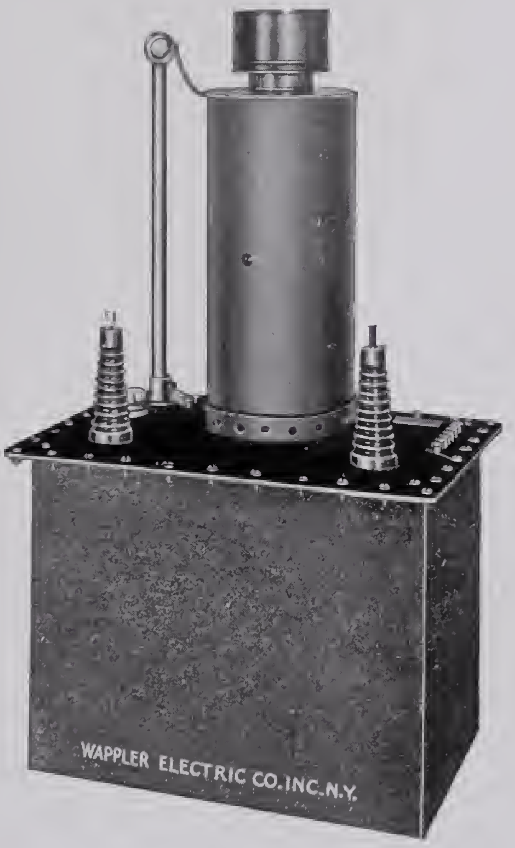

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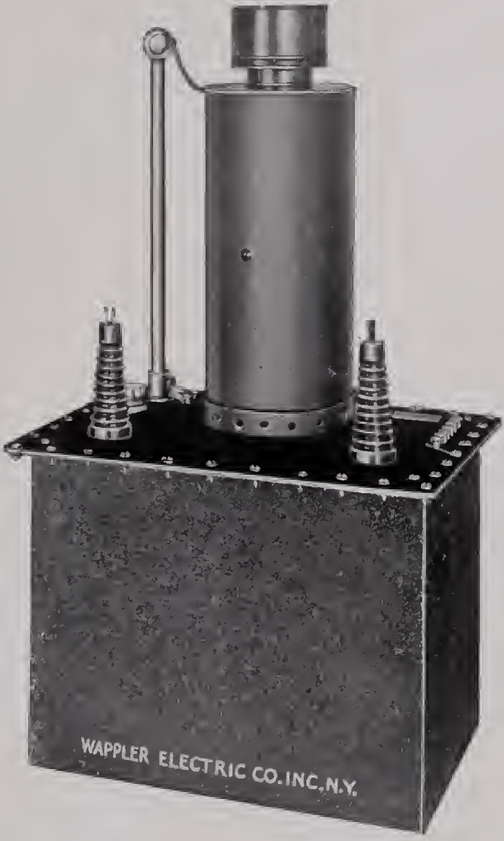

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